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TRANSCRIPT OF RECORD.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1886.

No. 150.

THE PHŒNIX CASTER COMPANY, APPELLANT,

vs.

AUGUSTUS SPIEGEL, HENRY FRANK, AND FREDERICK THOMS.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE DISTRICT OF INDIANA.

FILED OCTOBER 11, 1886.

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1 Pleas of the circuit court of the United States for the district of Indiana, begun and holden at the United States court-house, in the city of Indianapolis, in said district, on the first Tuesday of November, in the year of our Lord one thousand eight hundred and eighty-five, before the Honorable William A. Woods, judge of the district court of the United States for the district of Indiana and *ex officio* judge of said circuit court.

THE PHŒNIX CASTER COMPANY
vs.
AUGUSTUS SPIEGEL, HENRY FRANK, and FREDERICK THOMS. } No. 7747. Chancery.

Be it remembered that heretofore, to wit, at the November term of said court, on the 14th day of February, 1884, before the Honorable William A. Woods, judge as aforesaid of said court, the following proceedings were had in the above entitled cause, to wit:

Comes now the complainant, by C. P. Jacobs, Esq., its solicitor, and files its bill of complaint herein in the words following, to wit:

Bill of Complaint.

To the honorable the judges of the circuit court of the United States for the district of Indiana:

The Phœnix Caster Company, a corporation of Indiana, a citizen of Marion county and State of Indiana, brings this bill of complaint against Augustus Spiegel, Henry Frank, and Frederick Thoms, partners trading under the firm name of Spiegel, Thoms & Company, citizens of the State of Indiana, residing in the county of Marion, in the State of Indiana; and your orator respectfully represents unto your honors that Alexander C. Martin, of Butler county, Ohio, was the first inventor of a new and useful improvement in casters, which are [is] fully and particularly described in the letters patent hereinafter mentioned and which had not been known or used before his said invention.

And your orator further represents unto your honors that the said Martin, being so as aforesaid the first inventor and discoverer of the said improvement and invention, and being also a citizen
2 of the United States, did, upon due application therefor, obtain letters patent of the United States, dated the 1st day of May, A. D. 1877, numbered 190,152, for the said invention and improvement, in due form of law, under the seal of the Patent Office of the United States, signed by the Secretary of the Interior and countersigned by the Commissioner of Patents of the United States, whereby was granted and secured unto the said Alexander C. Martin, his heirs, administrators, and assigns, or intended so to be, for the term of seventeen years from and after the date of said letters patent, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used the said invention and

improvement; which said letters patent are now remaining on record in the Patent Office of the United States, and by virtue whereof the said Alexander C. Martin became and was the sole owner of all the rights and privileges granted and secured, or intended to be granted or secured, in and by the said letters patent, a certified copy of which is now here ready to be produced in court when required.

And your orator further represents unto your honors that the said Alexander C. Martin afterwards, to wit, on or about the 29th day of December, A. D. 1877, by an assignment in writing duly executed and delivered by the said Alexander C. Martin, and bearing date the last-mentioned date, sold, assigned, and transferred unto William H. Tucker, Henry Sohn, Robert S. Dorsey, and George A. Rentschler all his right, title, and interest in and to the said patent and improvements; which said assignment was duly recorded in the Patent Office of the United States, as by said assignment or a duly authenticated copy thereof, and the certificate of such recording affixed thereto, ready in court to be produced, will more fully and at large appear.

That afterwards, to wit, on the 3d day of December, 1883, the said Robert S. Dorsey died testate, leaving Kate L. Dorsey his sole legatee and James T. Layman as his executor, and the said Layman afterwards gave bonds and was duly qualified as such executor, and entered upon the duties of his trust.

That afterwards, on the 14th day of December, 1883, the said William H. Tucker, Kate L. Dorsey, James T. Layman, executor; Henry Sohn, and George A. Rentschler, by an instrument in writing assigned, transferred, and conveyed unto your orator, who is a corporation duly organized under the laws of Indiana, all their right, title, and interest in and to said letters patent No. 190,152 and the invention therein described, together with all rights and claims for damages against infringing parties of every sort whatever, which assignment or a copy thereof, duly certified, is now here ready to be produced in court whenever required.

And your orator further shows unto your honors that by virtue of the premises she became and now is the owner of the said letters patent and of the invention and improvements described therein, and that since she became interested therein as aforesaid she has invested and expended large sums of money and has been at great trouble and expense in and about said invention for the purpose of carrying on the business of manufacturing and selling furniture casters containing it and making the same profitable to herself and useful to the public, and that said invention has been and is of great benefit and advantage, and that casters were made according to said invention and sold by your orator to the great advantage of the public, and that the public have generally acknowledged and acquiesced in the validity of said letters patent and in the aforesaid rights of your orator; and your orator believes that she will realize and receive large gains and profits therefrom if infringements by the defendants and their confederates shall be prevented.

And your orator further shows unto your honors that on the —

day of ——, 1882, the said William H. Tucker, Robert S. Dorsey, Henry Sohn, and George A. Rentschler, who were then the assignees and owners of said Martin's patent and the invention therein described, filed their bill of complaint in this court, in equity, against Nelson Kingman, defendant, charging, among other things, that said Kingman had infringed upon the exclusive rights of the complainants as assignees of said Martin's patent by the sale
3 of furniture casters known as the Schenck caster, and praying for an accounting and an injunction; that said Kingman, being duly served with process, interposed no defense, and a decree *pro confesso* was rendered against him in said cause on the 5th day of February, 1883; that thereupon the complainants notified the said Schenck by mail of the pendency of said suit, and invited him to come in and defend the same, but said Schenck wholly failed and neglected so to do; that thereafter, on the 4th day of May, 1883, said cause was brought on for hearing before the Hon. Thomas Drummond, presiding judge of this court, evidence adduced, including Martin's patent, Schenck's patent, full-sized specimens of the Martin and Schenck casters, and the court thereupon rendered a decree of perpetual injunction in the cause against said Kingman, and ordered him to pay the costs, a copy of which decree is hereto annexed and marked Exhibit "A;" and this decree is still in full force, and valid.

And your orator further shows unto your honors that the casters indicated and described in said decree as the Schenck caster, and as manufactured under letters patent No. 250,290, issued to Martin B. Schenck, of Fulton, N. Y., on the 29th day of November, 1881, are similar to and identical with the casters used and sold by defendants, and known as the Yale caster, and as being manufactured by the Yale Caster Company, as hereinafter averred and set forth; that the defendants, Augustus Spiegel, Henry Frank, and Frederick Thoms, well knowing the premises, also the rights secured to your orator as aforesaid, but contriving to injure your orator and to deprive her of the benefits and advantages which might and otherwise would accrue unto her from said invention after the issue of the said letters patent as aforesaid, and after your orator became the owner thereof as aforesaid, and before the commencement of this suit, as your orator is informed and believes, used and sold certain furniture casters, known as the Schenck or Yale caster, made by the Yale Caster Company, being made in imitation of complainant's casters, in the said county of Marion, in the State of Indiana, and in the district of Indiana, and in divers other parts of the said district.

And your orator further represents unto your honors that such use and sale of such casters by defendants has been and is without the license or consent and against the will of your orator and in violation of her rights and in infringement of the aforesaid letters patent, and that said unlawful acts and infringement have been committed by the defendants with full knowledge of the rights of your orator and in defiance thereof, and that all the aforesaid unlawful acts and doings of the defendants are in defiance of the rights acquired by and secured to your orator as aforesaid, and to her great and irreparable loss and injury, and by which she has been and still

is being deprived of great gains and profits which she might and otherwise would have obtained, but which have been received and enjoyed by the defendants by and through their aforesaid unlawful acts and doings.

And your orator further represents unto your honors that she is informed and believes that the defendants have been attaching said Yale casters to furniture made by them and selling the same to their customers, and have a large quantity therefore on hand which they are offering for sale, and that they have made large gains, profits, and advantages from said use and sale, but to what extent and how much exactly your orator does not know, and prays a discovery thereof.

And your orator further represents unto your honors that the use of the said invention by the defendants, and their preparation for and avowed determination to continue the same, and their other aforesaid unlawful acts in disregard and defiance of the rights of your orator, have the effect to induce and encourage others to venture to infringe said letters patent in disregard of your orator's rights.

3½ And your orator further represents unto your honors that she has caused notice to be given to the said defendants of said infringements and of the rights of your orator in the premises, and requested them to desist and refrain from said infringements, but they have continued the use and sale of such infringing casters since said notice, and still continue the same in infringement of said letters patent.

And forasmuch as your orator can have no relief except in this honorable court, to the end, therefore, that the defendants may, if they can, show why your orator should not have the relief herein prayed for, and may, upon their corporal oaths and according to their best and utmost knowledge, remembrance, information, and belief, full, true, direct, and perfect answers made to the premises and all the several matters and things hereinbefore stated and charged as fully and particularly as if separately interrogated thereto, and that the said defendants may be compelled to account for and pay to your orator the profits by them acquired and the damages suffered by your orator from their aforesaid unlawful acts, and to render an account of the number of such casters purchased, used, or sold by them and what they cost defendants.

And your orator prays that the defendants may be compelled to account as aforesaid, and that they and their servants, agents, attorneys, and workmen and each and every of them may be restrained and enjoined by the order and injunction of this honorable court from directly or indirectly making, using, vending, delivering, working, or putting into practice, operation, or use, or in any way counterfeiting or imitating the said invention or any part thereof, or any furniture casters made in accordance therewith or like or similar to those which they have heretofore used or sold, the Yale or Schenck caster; and also that your honors, upon the entering of a decree for infringement as above prayed for, may proceed to assess, or cause to be assessed under your direction, in addition to the

profits to be accounted for by the defendants as aforesaid, the damages your orator has sustained by reason of such infringement, and that your honors may increase the actual damages so assessed to a sum equal to three times the amount of such assessment under the circumstances of the willful and unjust infringement by defendants, as above set forth; and she prays that the defendants may be decreed to pay the costs of this suit, and that your orator may have such other and further relief as to this honorable court shall seem meet and shall be agreeable to equity.

May it please your honors to grant unto your orator the writ of injunction, provisional as well as perpetual, issuing out of and under the seal of this honorable court, commanding, enjoining, and restraining the defendants, their servants, agents, attorneys, and workmen, and each and every of them, as is hereinbefore in that behalf prayed.

May it please your honors to grant unto your orator the writ of subpœna issuing out of and under the seal of this honorable court, directed to the defendants, commanding them, by a certain day and under a certain penalty, to be and appear in this honorable court, then and there to answer the premises and to stand and abide such order and decree as may be made against —.

THE PHŒNIX CASTER COMPANY, *Complainant.*

C. P. JACOBS, *Counsel.*

Verification.

UNITED STATES OF AMERICA, *District of Indiana,* } ss:

William H. Tucker, being duly sworn, on his oath says he is the *and* agent in this behalf of the Phœnix Caster Company named in the foregoing bill of complaint; that the same has been read in his hearing, and he knows well the contents thereof; that
4 the matters and things therein stated as of his own knowledge are true in substance and in fact; that as to the matters therein stated as upon information and belief they are true, as he verily believes.

WILLIAM H. TUCKER.

Subscribed and sworn to before me this 14th day of February, 1884.

NOBLE C. BUTLER,
Clerk U. S. C. C.

(EXHIBIT "A.")

In the Circuit Court of the United States, District of Indiana. May Term, 1883.

FRIDAY, *May 4th, A. D.* 1883.

Before Honorable Thomas Drummond, judge.

WILLIAM H. TUCKER, ROBERT S. DORSEY, HENRY SOHN, and GEORGE A. RENTSCHLER *vs.* NELSON KINGMAN. } 7529. Chancery.

Now come the complainants, by C. P. Jacobs, Esq., their solicitor, and move the court to set this cause down for final hearing and decree upon the default of the defendant and decree *pro confesso*, heretofore entered on the 5th day of February, 1883, which motion is now granted.

And thereupon the complainants produce before the court oral and documentary evidence and the exhibit of mechanical devices, from which the court finds as follows:

1. That Alexander Martin, of Hamilton, Butler county, Ohio, was the first and original inventor of an improvement in furniture casters, and that letters patent of the United States were issued to him therefor on the 1st day of May, 1877, numbered 190,152, and that said letters patent are good and valid.

2. That on the 29th day of December, 1877, the complainants became and now are the owners of said letters patent for the entire territory of the United States by assignment from said Alexander Martin, as set forth in the bill of complaint.

3. That the defendant, Nelson Kingman, has infringed upon the complainants' rights under said letters patent and the assignment thereof to them by the sale of furniture casters manufactured under and in accordance with certain letters patent issued to Martin B. Schenck, of Fulton, New York, on the 29th day of November, 1881, and numbered 250,290.

4. That on the 23d day of October, 1882, the complainants, by counsel, addressed a written notice to said Schenck notifying him that the casters as made by him were infringements upon the Martin patent, No. 190,152, and requested him to desist from the manufacture and sale thereof; that such notice was enclosed in a sealed envelope, addressed M. B. Schenck, Fulton, N. Y., the postage prepaid by the affixing of the proper stamp, and deposited in the post office at Indianapolis, Indiana, the same day.

5. That on the 14th day of February, 1883, and after the entering of the default of defendant Kingman in this case, the complainants, by counsel, wrote a letter to M. B. Schenck, Fulton, N. Y., informing him that a default had been entered in this case and agreeing to grant him thirty days longer in which to file an answer and make a defense to this suit, and notifying said Schenck that

unless he should now proceed to make such defense they should regard it as a concession on the part of him, said Schenck, that the casters made by him were an infringement upon complainants' patent; that this letter was put in a sealed envelope, addressed to said M. B. Schenck, at Fulton, N. Y., the postage prepaid, and deposited in the post office at Indianapolis, Indiana, the same day.

6. That the complainants are entitled to a perpetual injunction against the defendant Kingman, as prayed in the bill of complaint.

7. That inasmuch as the sales by the defendant Kingman were few in number, that the defendants (they now waiving any reference to a master to compute damages) are entitled to recover of defendant nominal damages, one dollar and all the costs of this action, taxed at —— dollars.

It is therefore ordered, adjudged, and decreed by the court that the defendant, Nelson Kingman, be perpetually enjoined from making, selling, or using any furniture casters like or similar to those described in the said Schenck letters patent, No. 250,290, or like or similar to those he has heretofore sold, and that he pay to complainants the sum of one dollar damages and all the costs of this action, and that in default thereof execution issue therefor as at law, collectible without any relief from valuation or appraisement laws.

All of which is finally ordered, adjudged, and decreed.

5 In the Circuit Court of the United States, Dist. of Indiana.

UNITED STATES OF AMERICA, *District of Indiana*, } *ss*:

I, Noble C. Butler, clerk of said court for said district, do hereby certify that the above and foregoing is a full, true, and complete copy of the order of said court made and entered of record in my office on the 4th day of May, A. D. 1883, in the cause entitled "William H. Tucker *et al. vs.* Nelson Kingman," No. 7529.

[SEAL.] Witness my hand and the seal of said court, at Indianapolis, in said district, this 7th day of May, A. D. 1883.

NOBLE C. BUTLER, *Clerk.*

And afterwards, to wit, at the November term of said court, on the 24th day of April, 1884, before the Honorable William A. Woods, judge as aforesaid of said court, the following further proceedings were had in the above-entitled cause, to wit:

Come now the defendants, by C. H. Burchenal, Esq., their solicitor, and file their answer herein in the words following, to wit:

The Joint Answer of the said Defendants, Augustus Spiegel, Henry Frank, and Frederick Thoms, to the said Bill of Complaint of the said Defendant, The Phœnix Caster Company.

These defendants, now and at all times hereafter, saving and reserving to themselves and each of them all benefit and advantage

of exception which can or may be had or taken to the many errors, uncertainties, and other imperfections in the said complainant's said bill of complaint contained, for answer thereunto or unto so much or such parts thereof as these defendants are advised is or are material or necessary for them or any of them to make answer unto, they, these defendants, answering, say—

They admit that the said Alexander C. Martin obtained letters patent of the United States (No. 196,152), dated May 1, 1877, for an alleged improvement in furniture casters, as stated in said bill of complaint, and that on the 29th day of December, 1877, the said Martin and the said William H. Tucker, Henry Sohn, Robert S. Dorsey, and George A. Rentschler made and entered into an agreement in writing, which was afterwards recorded in the Patent Office of the United States, wherein and whereby the said Martin, for certain considerations and upon certain conditions therein specified, sold, assigned, and set over to the said Dorsey, Tucker, Sohn, and Rentschler all the right, title, and interest of him, the said Martin, to and in the said letters patent and the inventions therein described; and the said Tucker, Dorsey, Sohn, and Rentschler therein and thereby covenanted and agreed to pay certain royalties and to do and perform divers other acts and things therein stipulated to be done and performed on their part; which said agreement constitutes and is the only assignment or conveyance of the said letters patent made by the said Martin of which these defendants have any knowledge, information, or belief; but these defendants say that in and by the said agreement it was and is further expressly provided that in case the said Tucker, Dorsey, Sohn, and Rentschler should fail to faithfully fulfill any and all of the said stipulations and provisions of the said agreement on their part to be performed, then and at the time of such failure the said assignment of the said letters patent should be and become null and void, and that the same should revert back to the said Martin, and be revested in him the same as if the said assignment had never been made; all of which will appear fully in and by the said instrument of assignment when the same shall be produced in court; and these defendants say they

6 are informed and believe that after the execution of the said agreement, but before the commencement of this suit, the said Martin died, at the county of Butler and State of Ohio, and letters testamentary or letters of administration upon his estate were, by the proper probate court of said Butler county, Ohio, duly issued to Mrs. A. M. Martin, the widow of said decedent, who was then and there duly qualified and has ever since been and now is acting as such executrix or administratrix, and is the proper and legal representative of him, the said decedent.

These defendants admit the death of the said Robert S. Dorsey and the qualification of his executors, as stated in said bill of complaint, but they have no knowledge or information, save by the said bill, as to the conveyance, assignment, or transfer by said executors, or by the said Tucker, Sohn, and Rentschler, of any interest in the said letters patent to the said complainant, or as to the organization or incorporation of said complainant, or as to the assignment to said

complainant of any rights or claims for damages against infringing parties, and therefore they demand proof thereof; and these defendants have no knowledge, information, or belief as to whether the said Tucker, Dorsey, Sohn, and Rentschler or the said complainant have faithfully fulfilled all the stipulations and provisions of the said agreement made by and with the said Martin as aforesaid, or whether they or either of them have failed therein in whole or in part; but these defendants say they are advised and believe it to be true that the said Tucker, Dorsey, Sohn, and Rentschler were not and the said complainant is not the sole and absolute owner of the said alleged patent right and invention within and for said district of Indiana, but that the said legal representative of the said Martin has and holds a substantial right and interest therein and is a necessary and proper party to a just and complete determination of the matters in controversy in this suit, and they therefore pray that she be made a party hereto in due and legal form, to the end that the estate of the said Martin as well as the said complainant shall be bound and concluded by the determination and judgment of the court herein, and these defendants be protected from further vexatious litigation concerning the subject-matter of this suit.

And these defendants, further answering, say they deny that they or either of them have in any way or manner infringed upon the said Martin patent, or that they or either of them have used or sold any furniture casters made by the Yale Caster Company in imitation of the caster described in and covered by the said Martin patent, or that they have been attaching such casters to furniture made by them and selling the same to their customers, or that they have a large quantity thereof on hand which they are offering for sale; and they deny that they or either of them have at any time or in any manner contrived to injure the said complainant and deprive it of any advantage or benefits which might or would accrue to it from the said alleged patented invention.

And these defendants, further answering, say they have no knowledge concerning the said suit alleged to have been brought by the said Tucker, Dorsey, Sohn, and Rentschler against the said Nelson Kingman, and of the said alleged proceedings and decree therein, but they are informed and believe that the said suit was brought and the said proceedings taken by and through collusion with the said Kingman and with the understanding that no defense was to be interposed by him and no judgment for damages or costs was to be enforced against him, and that such proceedings were not taken in good faith by said parties to redress any real wrong or injury suffered by them, but for the purpose of advertising their business and increasing the sale of their goods; and these defendants are informed and believe that the casters mentioned and described in said alleged decree as manufactured under said letters patent issued to Martin B. Schenck are not similar to and identical with any casters used and sold by these defendants since the said alleged assignment of the said Martin patent to said complainant.

And these defendants, further answering, say they are in-
7 formed and believe, and therefore do so charge, that the said

Alexander C. Martin is not and was not the original and first inventor of the said alleged inventions described in the said letters patent issued to him, but that the same, in all its material and essential features and parts, was known and used by others long before the said alleged invention thereof by him, the said Martin, to wit: By Gilbert L. Bailey, of Portland, Maine, at said Portland, Maine; by Frederick G. Ford, of the city of New York, at said city of New York; by James T. Barnes, of Hudson City, New Jersey, at said Hudson City; by Alonzo Arnold and Otto G. Handschildt, of Norwalk, Connecticut, at said Norwalk; by Henry Netz, of Brooklyn, New York, at said Brooklyn; by John E. Buckingham, of Washington, District of Columbia, at said Washington; by Lafayette Blair, of Painesville, Ohio, at said Painesville; by James L. Plympton, of the city of New York, at said city; by William R. Morris, of Cincinnati, Ohio, at said Cincinnati; by John Lemman, of Cincinnati, Ohio, at said Cincinnati; by John H. Fenton, of Indianapolis, Indiana, at said Indianapolis; by Oliver H. Dodge, of Jackson, Tennessee, at said Jackson; by Cyrus W. Saladee, of Washington, D. C., at said Washington; by Louis H. Gano, of the city of New York, at said city; by Robert Gibson, of the city of New York at said city; by Isaac Hodgson, of Indianapolis, Indiana, at said Indianapolis; by Frederick Payne Mackelcan, of Birmingham, England, and James Murdock, of Hackney Road, England, at said Birmingham and Hackney Road, England; George Lowry, of Salford, England, at said Salford, England; by Alfred Todd, of Birmingham, England, at said Birmingham; by George E. Turner, of London, England, at said London; by Thomas Glaister, of ——, England, at said ——; by Frederick Isett and David Farrar, of ——, England, at said ——, England; by Arthur H. Robinson, of ——, England, at said ——, and by divers other persons whose names and places of residence are to these defendants at present unknown and cannot now be specified by them, but which they pray they may be allowed to state and specify by proper amendment when the same shall be fully discovered; and that the said alleged invention, in all its material and essential features and parts, was also anticipated and described in divers letters patent of the United States long previously thereto issued, to wit:

In letters patent No. 12578, issued March 21, 1855, to Gilbert L. Bailey; No. 58999, issued October 23, 1866, to Frederick G. Ford; No. 66116, issued June 25, 1867, to James T. Barnes; No. 126,433, issued May 7, 1872, to Arnold and Handschildt; No. 149,782, issued April 14, 1874, to Henry Netz; No. 150,132, issued April 28, 1874, to John E. Buckingham; No. 37305, issued January 6, 1863, to James L. Plimpton, and reissued (No. 3906) April 5, 1870, and again reissued (No. 4292) March 7, 1871, to said Plimpton; No. 93110, issued July 27, 1869, to William R. Morris; No. 103,346, issued May 24, 1870, to John Lemman; No. 122,376, issued January 2, 1872, to John H. Fenton; No. 88711, issued April 6, 1869, to Isaac Hodgson; No. 136,711, issued March 11, 1873, to Oliver H. Dodge; No. 177,567, issued May 16, 1876, to Cyrus W. Saladee; No. 188,351, issued March 13, 1877, to Louis H. Gano; No. 189,451, is-

sued March 24, 1877, to Robert Gibson; No. 159,492, issued February 9, 1875, to Lafayette Blair; and also in the following English patents, to wit: No. 8749, issued December 23, 1840, to Frederick P. Mackelcan and James Murdock; No. 3974, issued November 16, 1875, to Frederick Isett and David Farrar; No. 4172, issued December 2, 1875, to Alfred Todd; No. 542, issued February 10, 1876, to George Lowry; No. 1343, issued March 29, 1876, to George E. Turner; No. 2256, issued May 29, 1876, to Arthur H. Robinson; No. 2618, issued June 24, 1876, to Thomas Glaister; No. 4889, issued December 18, 1876, to Louis B. Devot; and also in divers other letters patent of the United States and in divers other English and other foreign patents, the numbers and dates of which, as well as the names of the several patentees therein, are at present to these defendants unknown and cannot now be specified by them, but which they pray they may be allowed to state and specify by proper amendment when the same shall be fully discovered by them.

8 And these defendants, further answering, say they are informed by persons expert in the art and by counsel learned in the law, and believe it to be true, and therefore do so charge, that the said letters patent issued to the said Martin as aforesaid were and are inoperative, null, and void, for the further reason that the invention claimed in and covered by the said letters patent, to wit, a furniture caster composed of the elements named in the claim of the said alleged inventor, was and is incomplete, imperfect, and incapable of operation for the purpose for which it purports to be designed, as will sufficiently appear when the said letters patent are produced in court; and for the further reason that all and singular the various points, features, and respects in which the same varies and differs from the various casters and rolling devices previously known and in use were and are merely colorable variations from such previous devices and suggested thereby, and did not call for or involve the exercise of inventive faculty, and were and are void of practical utility.

And these defendants, further answering, say that they have no knowledge or information, save by the said bill of said complainant, as to the extent to which the said complainant has expended and invested its money in the business of making and selling furniture casters or the gains and profits it has made or expects to realize therefrom; but these defendants are informed and believe that the casters which have been made and are being made by said complainant in the course of its said business embrace and contain divers other important and necessary elements beside and in addition to those claimed by the said Martin in his said patent, and without which such casters are and would be inoperative and useless, and that no gains or profits have been or can be realized from the making and selling of the said casters, as claimed in said Martin's patent.

And these defendants severally deny all and all manner of unlawful combination and confederacy wherewith they are by the said bill charged, without this, that there is any other matter, cause, or thing in said complainant's said bill of complaint contained material or necessary for these defendants or either of them to make answer

unto and not herein and hereby well and sufficiently answered, confessed, traversed, and denied is true to the knowledge or belief of these defendants; all which matters and things these defendants are ready and willing to aver, maintain, and prove as this honorable court shall direct, and humbly pray to be hence dismissed with their reasonable costs and charges in this behalf most wrongfully sustained.

AUGUSTUS SPIEGEL,
HENRY FRANK,
FREDERICK THOMS,
By CHAS. H. BURCHENAL, *Solicitor.*

9 And afterwards, to wit, at the May term of said court, on the 7th day of July, 1884, before the Honorable William A. Woods, judge as aforesaid of said court, the following further proceedings were had in the above-entitled cause, to wit:

Comes now the complainant, by C. P. Jacobs, Esq., its solicitor, and upon his motion it is ordered that Anna Taylor, of the city of Indianapolis, be, and she is hereby, appointed special examiner in chancery in this cause, and is empowered to cause to come before her, at the law office of C. P. Jacobs, No. 36 North Delaware street, in said city of Indianapolis, upon proper notice given to the defendants, the witnesses of the complainant, and to take their depositions in writing and return the same, duly certified, into this court, addressed to the clerk thereof, at Indianapolis.

And afterwards, to wit, at the May term of said court, on the 20th day of September, 1884, before the Honorable William A. Woods, judge as aforesaid of said court, the following further proceedings were had in the above-entitled cause, to wit:

Comes now the complainant, by C. P. Jacobs, Esq., its solicitor, and by agreement files its replication herein in the words following, to wit:

The Replication of The Phœnix Caster Company, Complainant, to the Answer of Augustus Spiegel and Others, Defendants.

This repliant, saving and reserving unto herself all and all manner of advantage of exception to the manifold insufficiencies of the said answer, for replication thereunto says that she will aver and prove her said bill to be true, certain, and sufficient in the law to be answered unto, and that the said answer of the said defendant is uncertain, untrue, and insufficient to be replied unto by this repliant without this, that any other matter or thing whatsoever in the said answer contained, material or effectual in the law to be replied unto, confessed and avoided, traversed or denied, is true; all which matters and things this repliant is and will be ready to aver and prove as this honorable court shall direct, and humbly prays as in and by her said bill she has already prayed.

C. P. JACOBS,
Attorney and Counsel for Complainant.

10 And afterwards, to wit, at the November term of said court, on the 26th day of November, 1884, before the Honorable William A. Woods, judge as aforesaid of said court, the following further proceedings were had in the above-entitled cause, to wit:

Comes now the complainant, by C. P. Jacobs, Esq., its solicitor, and upon his motion it is ordered that William E. Burton, of the city of Indianapolis, be, and he is hereby, appointed special examiner in chancery in this cause, and is empowered to cause to come before him, at law office of C. P. Jacobs, No. 36 North Delaware street, in said city of Indianapolis, upon proper notice given to the defendants, the witnesses of the complainant, and to take their depositions in writing and return the same, duly certified, into this court, addressed to the clerk thereof, at Indianapolis.

And afterwards, to wit, at the November term of said court, on the 26th day of January, 1886, before the Honorable William A. Woods, judge as aforesaid of said court, the following further proceedings were had in the above-entitled cause, to wit:

Come the parties, plaintiff and defendants, by their respective solicitors, and this cause is submitted to the court for hearing and judgment, and the court, being sufficiently advised in the premises, finds that there has been no infringement by the defendants of the letters patent aforesaid, and that the bill of complaint be dismissed at complainant's costs.

It is therefore ordered, adjudged, and decreed by the court that the bill of complaint herein be, and the same is hereby, dismissed.

11 It is further ordered, adjudged, and decreed that the defendants recover of the complainant their costs herein expended, taxed at $—.

From this decree the complainant in open court claims an appeal to the Supreme Court of the United States and gives good and sufficient surety in the sum of $500 that he will prosecute his said appeal to effect and answer all damages and costs if he fails to make his plea good, and said appeal is allowed accordingly.

And afterwards, to wit, at the November term of said court, on the 23rd day of February, 1886, before the Honorable William A. Woods, judge as aforesaid of said court, the following further proceedings were had in the above-entitled cause, to wit:

Comes now said complainant, The Phœnix Caster Company, by its solicitor, and files its appeal bond herein in the sum of five hundred dollars, with William H. Tucker and James T. Layman sureties thereon, which bond is approved by the court.

12 *Opinion of the Court.*

The action in this case is for infringement of letters patent No. 190,152, granted May 1st, 1877, to Alexander C. Martin, for "improvement in furniture casters." The plaintiffs claim title by virtue of certain assignments of the patent.

The infringement charged against Spiegel & Co. consisted in the possession and sale of an article known as "The Yale Caster," made at New Haven, Connecticut.

The complaint against Ogborn and the Richmond Caster Company in the other case is for the manufacture, use, and sale of casters made under letters patent No. 273,278, granted March 6th, 1883, to the Richmond Caster Company, as assignee of Ogborn.

Besides disputing the plaintiffs' title to the Martin patent the defendants in each case deny infringement, and also the validity of that patent.

The prior art also is shown by reference to numerous earlier patents, both American and English, which, it is alleged, anticipated the Martin combination entirely, or, at least, in so far as to impose upon it a strict construction, limiting it to the particular arrangement of parts described and excluding any pretense of infringement by the defendants.

After a painstaking consideration of the evidence and accompanying models, the opinions of the experts, and the arguments and briefs of counsel, which upon both sides have been quite exhaustive, I am compelled to the conclusion in each case that infringement has not been shown, and consequently that the bills must be dismissed.

The combination of the patent in question accomplished no new result in mechanics, and differed from previous known
13 combinations designed for the same and like purposes only in the construction of one or two of the parts, whereby, perhaps, a better but certainly not a different kind of result was accomplished than had been before effected. More than this cannot be justly claimed, as it seems to me.

Besides, it appears that Martin's application for a patent was rejected and withdrawn two or more times, the examiner insisting, upon certain references, "that all applicants' novelty in entire device was expressed only by words 'as specified.'" In obedience to this ruling the claim and perhaps the specifications was modified and patent granted. It follows that the patent cannot now by a liberal construction be made to include anything so denied by the Patent Office, and without this the devices of the defendants cannot, I think, be said to infringe.

Bill dismissed.

14 *Complainant's Direct Evidence.*

Testimony of William H. Tucker, Chester Bradford, Charles H. Burchenal, and Henry Frank, witnesses, taken on behalf of the complainant in the cause now pending in the United States circuit court for the district of Indiana, in chancery, wherein the Phœnix Caster Company is complainant and Augustus Spiegel, Henry Frank, and Frederick Thoms are defendants.

This testimony was taken at the office of C. P. Jacobs, Esq., complainant's solicitor, by agreement of parties, on Monday, the seventh day of July, 1884, before Anna Taylor, special examiner.

During the taking of these depositions the complainants were represented by C. P. Jacobs, Esq., their solicitor, and the defendants by C. H. Burchenal, Esq., their solicitor.

WILLIAM H. TUCKER, the first witness, being duly sworn to testify the truth, the whole truth, and nothing but the truth relating to the matters at issue in said cause, testifies as follows:

Examined by C. P. JACOBS, Esq.:

Question 1. State your name, age, residence, and occupation.

Answer. William H. Tucker; residence, Indianapolis; occupation, manufacturer; age, forty.

Q. 2. What relation do you bear to the defendants, the Phœnix Caster Company?

A. I am president of the company.

Q. 3. I now exhibit to you a working model of a furniture caster having a bronzed iron frame and top plate, with two lignum-vitæ wheels. I will ask you if you ever saw this caster before, and if you brought it to me where did you get it?

A. Yes; I have seen that caster before; I got that caster at Chicago; I bought it of Gibson, Barris & Co., of Chicago.

Q. 4. What caster in the market does this caster represent?

A. A caster known as the Yale caster.

Q. 5. Do you know by whom it was manufactured?

A. By the Yale Caster Company of New Haven, Connecticut.

Q. 6. If you saw any casters like that one at the furniture warehouse of the defendants in this city, state that fact and when it was; and if you had any conversation with either of the defendants about it, state what that was.

A. During the month of February I saw the caster in use at the furniture ware-rooms of Spiegel & Thoms, of this city. I asked their salesman why they were not buying our Martin caster, that the Phœnix Caster Company were making. They said they were buying a caster made East—buying of John Duer & Sons, of Baltimore, who were large dealers in casters. I then saw the caster in use on pieces of furniture in their ware-rooms.

Q. 7. Did you have any conversation with Mr. Frank about it; and, if you did, what did he say?

A. I did not have any conversation with Mr. Frank about it; he was not in at the time. I talked with a salesman there.

Q. 8. Were the casters like or different from the one now shown you (Complainant's Exhibits Yale Caster)?

A. The casters they had under the piece of furniture I examined were the same size of caster—identically the same caster—as the exhibit shown here.

Q. 9. Do you know how many they had purchased of them?

A. No, sir; I do not.

Q. 10. What do you know about their selling furniture that had these casters on? What did the salesman say about that?

A. They were using—putting the casters on the furniture they were selling.

Q. 11. You have been in the caster trade a good many years?

A. Yes, sir.

Q. 12. Have you seen the Yale caster in the market?

A. Yes, sir.

Q. 13. I will ask you to state whether those you saw in Spiegel and Thoms' were or were not the Yale Caster Manufacturing Company's caster, known as the Yale caster of the market.

A. Yes, sir; they were.

15 Q. 14. I now exhibit to you a circular headed "The Yale Caster," with a cut No. 20, full size, marked "Patented Oct. 9, 1877; design and other patents pending," with the Yale Caster Company's name and location at the bottom. State if you have ever seen that before. And, if yes, where did you get it?

A. I have seen it. It was sent to me by mail.

Q. 15. Where did it come from?

A. It was sent from Chicago, I suppose, by H. & G. L. Munger, represented to be the general Western agents.

Q. 16. You received this circular from them, did you?

A. I suppose it was from them.

Q. 17. I will ask you if you do not recollect that the envelope it came in had their card on the outside?

A. Yes, sir.

Q. 18. Wherein did the caster you saw at Spiegel & Thoms' which they were putting on furniture, which they said they had purchased from parties in Baltimore, differ from the one shown on this circular?

A. It was a smaller caster than the one shown on this circular.

Q. 19. Wherein did it differ in construction and operation?

A. It did not differ any.

Complainants now offer in evidence the working model exhibited to the witness, which is marked by the examiner "Complainants' Exhibit Yale Caster." (See appendix.)

Complainants also offer in evidence the circular exhibited to the witness, which is marked "Complainants' Exhibit Yale Caster Co.'s Circular." (See appendix.)

The defendants object to the introduction of the circular on the ground that it is not relevant, and no connection has been shown between the defendants and the circular.

Complainants now offer in evidence a certified copy of the letters patent issued to Alexander C. Martin for furniture caster, on the 1st day of May, 1877, No. 190,152. It is marked "Complainants' Exhibit Complainants' Patent." (See appendix.)

Complainants also offer in evidence a certified copy of the assignment from Alexander C. Martin to William H. Tucker, Robert S. Dorsey, George A. Rentschler, and Henry Sohn, dated December 29, A. D. 1877. It was marked "Complainants' Exhibit Martin Assignment." (See appendix.)

Complainants also offer in evidence a certified copy of an assignment from William H. Tucker, Kate L. Dorsey, James T. Layman, executor of the estate of Robert S. Dorsey, deceased; William H.

Tucker, George A. Rentschler, and Henry Sohn to the Phœnix Caster Company, of Indianapolis, Indiana, dated the 14th day of December, 1883. It is marked "Complainants' Exhibit Phœnix Caster Company Assignment." (See appendix.)

Complainants also offer in evidence a certified copy of the letters testamentary issued to James T. Layman upon the estate of Robert S. Dorsey, deceased, by the Marion civil circuit court, which is marked "Complainants' Exhibit Probate Letters." (See appendix.)

Complainants also offer in evidence a certified copy of the articles of incorporation of the Phœnix Caster Company of Indianapolis, Indiana. It is marked "Complainants' Exhibit Corporate Articles." (See appendix.)

Complainants also offer in evidence a certified copy of a decree of the circuit court of the United States for the district of Indiana, Friday, May 4, 1883, in the cause of William H. Tucker and others against Nelson Kingman, in chancery, No. 7529. It is marked "Complainants' Exhibit Kingman Decree." (See appendix.)

Defendants object to the introduction of that decree on the ground that it is irrelevant and these defendants are not parties to it in any way.

Complainants also offer in evidence a working model of a caster made of iron with wooden wheels to illustrate the construction shown in Martin's patent, which is marked "Complainants' Exhibit Oblong Plate Caster." (See appendix.)

15½ Complainants also offer in evidence Patent Office copy of the drawings and specifications of letters patent issued to M. B. Schenck, dated November 29, 1881, No 250,290. It is marked "Complainants' Exhibit Schenck Patent." (See appendix)

The defendants object to the introduction of said exhibit on the ground that it is irrelevant in this case, waiving any objection as to its not being certified.

CHESTER BRADFORD, being duly sworn to testify the truth, the whole truth, and nothing but the truth, relating to the matters at issue in this cause, testifies as follows:

(Examined by C. P. JACOBS, Esq.:)

Question 1. State your name, age, residence, and occupation.

Answer. Chester Bradford; age, 32; residence, Indianapolis; occupation, solicitor of patents and expert in patent litigation.

Q. 2. State what your experience has been in handling and dealing with patent inventions and with machinery generally.

A. Ever since boyhood I have been familiar with machinery, having been engaged for a number of years in running, setting up, and making machinery of various kinds, and for nearly eight years last past I have been engaged in my present profession of solicitor of patents and expert in patent matters, during which time I have had occasion to examine a very large number of patents of various kinds, and various classes of machinery, and have procured a large number of letters patent for inventors.

Q. 3. To what extent have you kept yourself familiar with the

issues of patents from the Patent Office in the United States and foreign countries?

A. I take the Official Gazette regularly, and examine it so far as I have time each issue; more especially, however, in relation to decisions than the issue of patents, as it would require a great amount of time to become familiar with all the patents as they issue; but I have examined such as appear to be of interest, and have a great many submitted to me for my opinion for various purposes.

Q. 4. How frequently do you consult the Patent Office reports? And if you have them in your office you may state that fact.

A. I have a complete set of reports in my office, and have had nearly ever since I commenced business, which I consult nearly every day and probably some days from ten to twenty times.

Q. 5. State whether you have examined the complainants' letters patent issued to Alexander C. Martin May 1, 1877; and, if yea, whether you understand the same.

A. I have examined a copy of the letters patent named in the question and understand the same.

Q. 6. Will you please describe the invention therein set forth?

A. The invention shown and described in the letters patent referred to consists of a furniture caster having two floor wheels mounted on an axle supported by a wheel-housing, said wheel-housing being secured to a plate adapted to be attached to the bottom of the legs of an article of furniture by means of a spindle, and having an anti-friction truck mounted on an axle in the wheel-housing interposed between said wheel-housing and the plate on the bottom of the furniture. It has some peculiarities of construction, whereby the caster is permitted to oscillate on the spindle by which it is connected to the furniture, and it is adapted to revolve around said spindle, the anti-friction truck coming in contact with the bottom of the furniture or the plate attached thereto, usually the latter.

Q. 7. Where is the friction wheel placed with reference to the axle of the floor wheels?

A. It is placed directly above the axle of the floor wheels and between said floor wheels.

Q. 8. How is the oscillating motion provided for in the Martin device?

A. The housing has what is termed an elliptical housing opening through which the spindle passes, said spindle having a head upon its lower end, which prevents the housing from dropping off, and also what is termed a rocker-formed collar bearing, which rests upon this head.

16 Q. 9. What is the object of this oscillating movement?

A. To permit the wheels to pass over irregularities while both remain in contact with the surface over which they pass, thus preventing any binding upon the spindle or any other parts which would be present if this peculiarity of construction was not present.

Q. 10. What advantage is it, if any, in placing the anti-friction wheel directly over the axle of the floor wheels?

A. This location of the anti-friction wheel is that wherein it will

make the fewest revolutions as the caster revolves around the spindle to which it is attached; it also brings the weight directly above the axle of the floor wheels and relieves any strain upon the other portions of the wheel-housing, the result being an increased mobility in swiveling, as stated in the specification, with the least amount of friction possible to the operations performed by the caster.

Q. 11. State what device, if any, you have ever seen or known in the market or in public use as a furniture caster wherein two floor wheels were mounted upon a common axle sustained in bearings in a wheel-housing having an anti-friction wheel placed directly over the axle of the floor wheels and the other mechanism of the caster arranged so as to provide for this combined motion you speak of, viz., the oscillation in a vertical plane and the revolution in a horizontal plane, prior to the date of Martin's patent.

A. I never saw such a caster prior to the date of Martin's patent. I have seen large numbers of the Martin caster since that date, however.

Q. 12. Had you ever heard of one prior to the date of Martin's patent?

A. I had never heard of any such caster prior to that date.

Q. 13. I now exhibit to you a caster marked "Complainant's Exhibit Yale Caster." Will you please describe what you find in that device?

A. I find floor wheels like those in the Martin caster, a wheel-housing similar to that in the Martin caster, a plate adapted to be attached to the bottom of a furniture leg similar to that in the Martin caster, a spindle depending therefrom to which the wheel-housing is attached, and an anti-friction truck interposed between the wheel-housing and said plate, located between the floor wheels, although not precisely vertically above the floor-wheel axle. I further find a second anti-friction truck on the opposite side of the spindle from the first, which serves to receive such portion of the weight as would be thrown thereon by reason of the location of the first anti-friction truck slightly in advance of the floor-wheel axle. I find in the wheel-housing an elliptical housing opening, into which the spindle extends, but instead of extending down through the housing and having a head upon the lower end I find the axle of the anti-friction trucks extended through this spindle, thus securing it to the housing. It, however, oscillates upon this continued axle and the anti-friction truck in substantially the same manner that the wheel-housing in the Martin patent oscillates upon the head on the lower end of the spindle and upon his anti-friction truck. The two casters operate in substantially the same way and accomplish the same result.

Q. 14. Do you or do you not find in this Yale caster model a caster wherein the floor wheels, with their housing, are adapted to revolve in a horizontal plane without the spindle?

A. The construction of the Yale caster permits this movement.

Q. 15. Would you or would you not understand from this model that its construction was designed to secure that revolution in a horizontal plane?

A. Yes; that appears to be the purpose of the construction, so far as it relates to that feature of the invention.

Q. 16. Do you or do you not find in this Yale caster model that the mechanism is adapted to permit the oscillation of the caster upon the spindle in a vertical plane?

A. I find construction which permits and is evidently designed to permit that movement.

17 Q. 17. State whether or not, in further examination, you find that a part of that forward friction wheel is directly in line over the axle of the floor wheels.

A. Yes; the top of the forward anti-friction wheel extends out so as to be vertically above the axle of the floor wheels. A central line carried vertically through the axle of the floor wheels to the top of the device would pass just inside that portion of the anti-friction truck which comes in contact with the plate.

Q. 18. Does the construction shown therein have the effect or not to throw the weight upon the axle of the floor wheel?

A. Yes; it has that effect.

Q. 19. Wherein does that Yale caster model differ in principle of operation from the device shown in the Martin patent, if at all?

A. I think it differs only in construction. I do not see that it differs in the principle of operation at all. The rear anti-friction truck receives but a very small portion of the weight, and by moving the forward anti-friction truck very slightly to the rear it would not receive any of it, and would then only serve the purpose that the rear point does in the Martin construction—of preventing the caster from dropping down out of position when the article of furniture was lifted from the floor.

Q. 20. What letters and figures do you find on the top of the plate of that caster?

A. "G, patented Oct. 9, 1877."

Q. 21. I will ask you to state whether you have examined the Official Patent Office Gazette of the United States Patent Office for the date of October 9, 1877.

A. I have.

Q. 22. I will ask you to state whether you find any caster in the drawings shown in the Official Gazette for that date of a caster having the two floor wheels, with an anti-friction wheel above and a mechanism adapted to provide for the oscillation in a vertical plane and the revolution in a horizontal plane.

Defendants object to the question on the ground that the patent itself would be the best evidence of what it contains.

A. I have examined the issue of the United States Patent Office Gazette of the date referred to and find two patents, one of which is numbered 196,024, issued to Sebastian Konz for a furniture caster which appears to have nothing at all to do with the present invention, but is simply a ball resting upon anti-friction rollers, and the other numbered 196,017, to Ernst Hoffstaetter, which appears to be a single-wheel caster having a plate attached to the bottom of the furniture leg, which plate has a spindle extending downwardly,

with an anti-friction truck interposed between the top of the wheel-housing and the side of the plate, said anti-friction truck and said spindle both being secured to the wheel-housing by a single shaft or pin which extends through them. In this latter particular it is like the Yale caster introduced in evidence, but I see no other feature of similarity, the two floor wheels not being present.

Q. 23. Does the Hoffstaetter patent show any mechanism, as appears from the Official Gazette, for allowing the caster to oscillate in a vertical and revolve in a horizontal plane?

A. Having only a single wheel, no oscillation in a vertical plane would seem necessary. It is probable that a very slight oscillation might take place, as the drawing shows a small opening between the wheel-housing and the plate on the bottom of the furniture leg, this being necessary, of course, in order to permit the anti-friction truck to operate; but, supposing the downwardly projecting spindle to fit closely in the opening into which it enters, there would be no oscillation to amount to anything, and even if there could it would be entirely unnecessary, as I said before, there being but a single floor wheel.

Q. 24. Does the device known as Hoffstaetter's patent embody the peculiar features described and claimed in the Martin patent?

A. No, sir; not as I understand it.

18 Q. 25. Examine the circular marked "Complainants' Exhibit Yale Caster Co.'s Circular" and state whether the Hoffstaetter patent or either of the patents you have examined, dated October 9, 1877, show a caster of the construction figured on the first page of that circular.

A. The cut on the first page of the circular shows a caster substantially like the Yale caster model, about which I have been testifying, and differs as widely from the patents of October 9, 1877, as they appear by the Official Gazette, as does the said Yale caster.

Q. 26. I will ask you to state whether you have examined the letters patent issued to M. B. Schenck November 29, 1881, numbered 250,290, and, if yea, whether you understand the same.

A. I have examined a copy of the patent referred to and understand the same.

Q. 27. Wherein, if at all, does the Yale caster model given in evidence differ from the caster shown in Schenck's letters patent?

A. It differs in the matter of having but one anti-friction wheel and in the manner of connecting the wheel-housing to the plate intended to be attached to the bottom of the furniture leg.

Q. 28. Do those differences relate to mechanical construction or principle of operation?

A. Mechanical construction, viz: There being no essential difference in the operation of the device, a caster constructed in accordance with this patent being equally well adapted to rotate about the spindle in a horizontal plane and to oscillate in a vertical plane as would the Yale caster or the Martin caster. The means of connecting the wheel-housing to the plate intended to be attached to the bottom of the furniture in the Schenck patent appears to be a

rigid stud or spindle projecting upwardly from the wheel-housing through an opening in a cavity in the plate instead of projecting downwardly from the plate through an opening in the wheel-housing, as in the Martin patent, being a mere reversal of the parts, as I understand it.

Q. 29. In this respect, then, is the one a mechanical equivalent of the other or not?

A. It is, decidedly.

Q. 30. I now exhibit to you a model in wood and iron, marked "Complainants' Exhibit Oblong Plate Caster," and ask you to examine that model and state whether it embodies the peculiar features of construction and the principles of operation shown in the Martin patent.

A. It does embody the principles of operation and the features of construction shown in the Martin patent, and is almost of identical construction with the drawing of said patent, being slightly different in configuration only.

Q. 31. Does this configuration of which you speak relate to the method of attaching it to the furniture, or otherwise?

A. It is mere form or shape. The plate is oblong instead of round, and upon the rear portion of the wheel-housing I find a slightly upwardly projecting portion, which does not appear in the patent, but the method of attaching the plate to the housing, the arrangement and location of the floor wheels, the housing, the plate, and the interposed friction wheel are all identically the same.

Q. 32. Wherein does the model in your hand, Complainants' Oblong Plate Caster, differ in principle of operation from the Complainants' Exhibit Yale Model Caster?

A. It does not differ at all in principle of operation, only in construction.

Q. 33. How does the change of the form of the plate or the method of fastening to the leg of the furniture affect the principle of operation of the caster?

A. Not in the slightest degree. It has nothing to do with it.

Q. 34. Could that be varied at pleasure to adapt it to the different styles of furniture without affecting the principle of operation of the different casters?

A. Undoubtedly it could. Casters of this character, as I have seen them in the market, have every variety of form of plates. Some have a plate with an upwardly extending socket and
19 some have an upwardly extended spindle, and so on, but all work in exactly the same manner. It, being rigid with the leg of the furniture, is not moved at all by any operation of the caster. The caster moves upon it, and therefore, so far as it is in the form of the plate on the under side, against which the anti-friction truck may move, the form otherwise cuts no figure in the operation of the device.

Cross-examination by C. H. BURCHENAL, Esq:

Q. 35. What kind of machinery have you had experience with before becoming solicitor of patents?

A. With a considerable variety; perhaps more than any other with saw-mill machinery.

Q. 36. Were you engaged in constructing machinery or in operating it?

A. I have been engaged somewhat in the construction of machinery. I worked as a mill-wright for a considerable time; I do not remember just how long. I also worked in a machine shop awhile. I have assisted in the setting up of machinery in mills and afterward in running it. I have had charge of a mill for a time, in which it was a part of my duty to look after the machinery generally, or at least partial charge.

Q. 37. Prior to the date of Martin's patent did you see or know of any caster having two wheels and an anti-friction wheel?

A. I never saw such a caster prior to the date of Martin's patent. Since the date of Martin's patent I have seen copies of various documents (question interrupts)——

Q. 38. I say, prior to the date of Martin's patent, had you seen or known of any caster having two wheels and an anti-friction wheel combined?

A. In going on to state further what I have seen I supposed that I would be possibly avoiding a further question, but, to answer your question directly, I had not.

Q. 39. In Martin's caster at what time does the swiveling motion occur?

A. The caster swivels about the spindle, which is located considerably to one side of the floor-wheel axle—that is, that vertical planes drawn through the spindle and through the floor-wheel axle would be some little distance apart, but parallel with each other. The caster swivels about the spindle.

Q. 40. When this swiveling motion occurs, when the caster is loaded, at what point does the spindle come in contact with the housing producing the swiveling motion?

A. It comes in contact with the sides of the housing opening.

Q. 41. At what part of the opening—the upper part or the lower part?

A. At the lower part, or near the lower part.

Q. 42. At what point does this oscillating motion occur; when the oscillating motion takes place at what point do the spindle and housing come in contact?

A. It is not necessary that they come very strongly in contact at all. The head upon the lower end of the spindle bears slightly upon the rocker-shaped collar bearing, as the inventor calls it, and it might come incidentally in contact with the housing opening at about the point it comes in contact during the swiveling operation.

Q. 43. Is not that all at the lower part of the housing opening?

A. It is.

Q. 44. Then both of these motions occur at the same point in the housing opening, the oscillating and the swiveling?

A. The contact of the housing with the spindle is at about the same point during the entire operation of the caster, as I understand it. Of course it varies from one side to the other, as the strain comes

from different directions upon the caster, but it is substantially all at the same place.

Q. 45. In operating the Martin caster when it is loaded does any part of the weight rest upon the projecting part at the rear of the housing?

A. It is not intended to; if it did it would be an accident. The projection cuts no figure at all in the operation of the caster, ordinarily.

20 Q. 46. Would not such contact impede the operation of the caster?

A. It would, more or less, according to the violence of the contact.

Q. 47. In the Yale caster model, when it is loaded, is not the weight distributed upon the two friction wheels?

A. It is to some extent. The greater portion comes upon the forward friction wheel, and the slight portion of the weight comes upon the rear friction wheel.

Q. 48. In the Yale caster does the swiveling motion and the oscillating motion occur at the same point?

A. Not exactly. The swiveling motion appears to be around the pivot by which the two parts are connected, slightly above the point over which the wheel-housing oscillates. The wheel-housing revolves about the pivot which comes in contact with the plate by means of passing through it, and it oscillates over the shaft or pin which passes through said pivot and through the anti-friction wheels, of course also oscillating over the anti-friction wheels themselves, as in all casters of this character.

Q. 49. Is the pivot upon which the housing of the Yale caster revolves firmly attached to the plate?

A. It is not. It appears to pass through a bar in the plate, except that I find that there is a projection on the under side of said plate which surrounds said pivot, and passes down into the housing opening and appears to come in contact with the sides of the same.

Q. 50. To what distance does that projection at the lower side of the plate extend down into the housing opening?

A. It extends down far enough to prevent the plate from moving one way or the other over the housing, and not so as to engage with the housing opening.

Q. 51. Does that projection extend as far down as the axis of the friction wheels?

A. No, sir; it terminates just above the pin or axle forming the axis of the friction wheels.

Q. 52. Whether the friction wheel is immediately above the axis of the floor wheels or in advance of the same, does not the weight of the article to be moved come upon the axis of the floor wheels?

A. Certainly; it must come upon the axle of the floor wheels in all cases; otherwise the wheels would not support the article. It may come, in some constructions, directly upon it from above, and in others somewhat in a different direction.

Q. 53. With two friction wheels, as in the Yale caster, one placed before the axis of the floor wheels and the other in rear of the same,

does not the weight of the article to be moved come upon the axis of the floor wheels?

A. It does.

Q. 54. Is not the operation of the caster equally effective in that case as in the other where the friction wheel is located immediately above the axis of the floor wheel?

A. It is substantially the same, though I should prefer the single anti-friction wheel, for the reason that so much of the weight as comes upon the rear anti-friction wheel causes unnecessary friction, one being sufficient, if properly arranged, as I understand it.

Q. 55. In the Yale caster do you find any rocker-formed collar bearing?

A. No, sir; I do not find anything that in terms might be called a rocker-formed collar bearing, but I find that the spindle or pivot which connects the plate and the wheel-housing is secured by a pin which passes through the wheel-housing and through said spindle, over which said spindle or pivot rocks, in substantially the same manner as the head of the spindle or pivot rocks over the rocker-formed collar bearing in the Martin patent.

Q. 56. In the housing of the Yale caster is there any rocker-formed collar bearing?

A. There is not, except so far as the pin, being permanent in the housing, might be said to be a part thereof.

Q. 57. What do you understand by the rocker-formed collar bearing in the Martin caster?

21 A. Underneath the rear portion of the housing is located the head, marked "D" in the drawing of the Martin patent. Directly above this you observe that the housing is cut away in such a manner that, viewed from the rear, it shows a rocker-shaped formation. You will observe this peculiarity most clearly by examining Fig. 3 of the drawing.

Q. 58. The object of that mode of constructing the lower part of the housing is to enable this button or collar at the lower end of the spindle to rock upon it as the oscillation goes on, is it not?

A. That is the object. The sides of the housing are necessarily cut away to permit this movement, else the sides of the head would come in contact with the housing and stop the freedom of motion or, at least, impede it to some extent.

Q. 59. In the Schenck patent, No. 250,290, do you find any housing opening?

A. Not in terms. I find what, for the purpose of this invention, is the equivalent of such an opening, viz., a socket in which a half sphere works in substantially the same manner, the opening down through the plate below this socket being enlarged so that the pin which projects up from the housing can work freely therein, as the pin which projects downwardly from the plate works in the opening in the housing of the Martin patent, the principles being reversed from those shown in the Martin patent, as I have previously stated, leaving the pin or spindle solid with the housing instead of with the plate, and the construction being changed accordingly.

Q. 60. Then in the Schenck patent the pivot upon which the caster turns is attached firmly to the housing?

A. It is.

Q. 61. And it turns in the plate that is attached to the furniture?

A. Yes, sir.

Redirect examination by C. P. JACOBS, Esq.:

Q. 62. What effect does the substitution of the rear friction wheel in the Yale model for the projecting point shown in the Schenck patent and in the Martin caster have upon the operation of the caster as to these combined motions of which it is capable, viz., the oscillation in a vertical and the revolution in a horizontal plane?

A. None at all.

Q. 63. What effect does the extension of the axis of the front friction wheel backward through the housing, so as to support the second friction wheel, have upon the functions of the caster as specified in the previous question?

A. None at all.

Q. 64. If the Yale caster shown you was arranged so that the opening in the top of the housing was circular instead of being elliptical in shape, what effect would it have upon the plate and spindle to oscillate therein?

A. It would deprive the caster of this function, as the housing opening spoken of serves to hold the plate in position in the direction of the length of the pin which forms the axle of the anti-friction wheels and secures the pivot to the wheel-housing, and therefore cannot be enlarged in that direction; and if it were made smaller in the other direction it would come up close around the downwardly projecting portion from the plate and hold it from oscillating at all.

Q. 65. That is to say, if I understand you, that opening in the top of the rear part of that housing in the Yale caster is elliptical?

A. Yes, sir.

Q. 66. If it were round, could the spindle oscillate in it?

A. It could not unless the whole were made so large as to destroy its other purposes, viz., that of holding the plate in position.

Q. 67. What effect does the extension of the axle of the friction wheel through the stub spindle have, as different from extending it through the collar bearing of the Martin caster, in effecting the oscillation?

22 A. It has no effect, so considered, different from the effect of the construction shown in the Martin patent.

Q. 68. If the securing of the end of the spindle in the Martin patent in the housing simply holds the parts together, then the extension of the axle of the friction wheel through the stub spindle of the Yale caster effects no different result?

A. None whatever, so far as I can see.

Q. 69. Is this rear friction wheel more than a mere duplication of the front one?

A. Nothing more, except in location.

Complainants offer in evidence Patent Office copy of letters patent No. 196,017, for furniture casters, to Ernst Hoffstaetter, October 9, 1877. It is marked "Complainants' Exhibit Hoffstaetter's Patent." (See appendix.)

Complainants also offer in evidence Patent Office copy of letters patent for furniture caster, issued to Sebastian Konz October 9, 1877. It is marked "Complainants' Exhibit Konz's Patent." (See appendix.)

The defendants object to the introduction of both patents named on the ground that they have no relevance to this case.

And further the witness saith not.

CHARLES H. BURCHENAL, being duly sworn to testify to the truth, the whole truth, and nothing but the truth in relation to this cause, testifies as follows:

(Examined by C. P. JACOBS, Esq., solicitor for complainants:)

Question 1. State your name, residence, and occupation.

Answer. Charles H. Burchenal; attorney-at-law; residence, Richmond, Indiana.

Q. 2. You are solicitor for defendants in this suit?

A. Yes, sir.

Q. 3. Will you state what part or relation the Yale Caster Company, in New Haven, Connecticut, are taking in the defense of this suit? I do not ask you to give any professional communications, only as to that fact.

The defendants object to the question on the ground that it has no relevancy to this case.

A. I was employed by Mr. M. B. Schenck. I was spoken to by him to defend this case.

Q. 4. That is the M. B. Schenck whose patent was introduced in evidence here, was it?

A. Yes; I suppose so.

Q. 5. Where does Mr. Schenck reside?

A. I do not know.

Q. 6. Do you not know, as a fact, that his patent is now controlled by the Yale Caster Company of New Haven?

A. I do not know.

Q. 7. Are they not acting in concert with each other?

A. I have no knowledge at all on the subject.

Q. 8. Is it not your understanding that they are acting under some sort of an agreement in the manufacture of casters?

A. I have no knowledge. I have an understanding that there is some connection between Schenck and that company.

Q. 9. Has not one of the officers of the Yale Caster Company been here at Indianapolis in relation to this suit?

A. I do not know about that.

Q. 10. To your knowledge, do you know of any person connected with the Yale Caster Company having come here on this business?

A. I have no knowledge on that subject.

Q. 11. Is it not your understanding that the defendants, Spiegel & Thoms, are to be relieved of any expense by Mr. Schenck or the Yale Caster Company, or both?

A. I do not know that. I do not know what arrangements have been made.

Q. 12. You do not look to Spiegel, Thoms & Co., the defendants, for any of your compensation in this case, do you?

A. No, sir.

Q. 13. You look solely to Mr. Schenck, do you?

A. I look to Mr. Schenck; yes, sir.

23 Q. 14. Was Mr. Schenck out here himself?

A. He was at Richmond. I understand that Mr. Schenck has some kind of arrangement with the Yale Caster Company, and they are manufacturing casters; but what the Yale Caster Company is doing I do not know.

And further the witness saith not.

HENRY FRANK, being duly sworn to testify the truth, the whole truth, and nothing but the truth relating to this cause, deposes as follows:

(Examined by C. P. JACOBS, Esq., solicitor for complainants:)

Question 1. State your name, age, residence, and occupation.

Answer. Henry Frank; age, fifty-seven years; occupation, manufacturing and selling furniture and carrying on a store; residence, Indianapolis.

Q. 2. You are a member of the firm of Spiegel, Thoms & Co., defendants in this case?

A. Yes, sir.

Q. 3. I now show you a model of the Yale caster, made of wood and iron, which has been given in evidence. You have seen casters like that before, have you not?

A. (Producing a caster.) This is the only one I have seen. I never heard of it before or saw it before until I saw that caster (handing it to Mr. Jacobs).

Q. 4. I understand you. You now produce this model with a stem on it, and you state that you have this kind in your stock?

A. Yes, sir.

Q. 5. Where did you buy these casters?

A. From John Duer, Baltimore.

Q. 6. How many?

A. One hundred or one hundred and fifty-seven, or somewhere along there.

Q. 7. And your firm, the defendants, have used them upon furniture that you have manufactured and sold?

A. Yes, sir.

Q. 8. What is the name of this caster, as it is known in the trade?

A. I think they call it the Yale caster.

Q. 9. Manufactured by the Yale Caster Company of New Haven, Connecticut?

A. I suppose it is. I never paid any attention to it, but that is what we call this—the Yale Caster Company.

Q. 10. Are you acquainted with Mr. Burchenal, the defendants' counsel, here?

A. Not that I know of; I never saw him before; no, sir.

Q. 11. He is defending this suit for Spiegel, Thoms & Co., the defendants, at the expense of the Yale Caster Company, is he not?

A. I do not know. When I bought the caster I asked John Duer's agent whether that would conflict with the caster here, and he said no. I said I did not want anything that would make any trouble here. He said it would not conflict in any way with the Phœnix at all; but he said, "If it does John Duer will defend you in any trouble on account of it." We notified John Duer of the proceedings in this case.

Q. 12. Did they take charge of the case?

A. Yes, sir.

Q. 13. Is it not your understanding that the Yale Caster Company is defending the case?

A. We never correspond with the Yale Caster Company; we correspond with Duer.

Q. 14. It is your understanding that John Duer is agent for the Yale Caster Company?

A. Yes; I suppose so. He is the one we dealt with.

Q. 15. Is it not your understanding, through Duer, that the Yale Caster Company are defending this case?

A. I do not know, but we are looking to John Duer. He said if anything turned up he would attend to it.

24 Q. 16. Your firm have never, personally, taken any steps or been at any expense in defending the case?

A. No, sir.

The complainants now offer in evidence the caster produced by the witness, and it is marked "Complainants' Exhibit Spiegel & Thoms' Yale Caster."

Complainants also offer in evidence a letter of seven pages, having the letter-head of the Yale Caster Company, dated New Haven, Connecticut, May 19, 1883, addressed to the Phœnix Caster Company, signed by the Yale Caster Company and M. B. Schenck. It is marked "Complainants' Exhibit Yale Caster Company's Letter." (See appendix, p. —.)

The defendants object to the introduction of the said letter on the ground that it has no connection with this case in any shape or form.

Witness excused and taking of the direct evidence closed.

UNITED STATES OF AMERICA, } *ss:*
District of Indiana, }

I, Anna Taylor, special examiner by order of court, do hereby certify that the foregoing depositions of William H. Tucker, Chester Bradford, Charles H. Burchenal, and Henry Frank were taken be-

fore me, by agreement of parties, at the office of Charles P. Jacobs, Esq., No. 36 N. Delaware street, in the city of Indianapolis, Ind., on the 7th day of July, 1884; that these depositions were taken on behalf of the complainants in a cause now pending in the circuit court of the United States for the district of Indiana, in chancery, wherein the Phœnix Caster Company is complainant and Augustus Spiegel and others are defendants; that these depositions were reduced to writing by me, and each of said witnesses was by me first duly sworn to testify the truth, the whole truth, and nothing but the truth relating to the matters at issue in said cause; that on the taking of said depositions the complainants were represented by C. P. Jacobs, Esq., their solicitor, and the defendants by C. H. Burchenal, Esq., their solicitor; that I am not akin to any of the parties in said action, have no interest therein, and am not concerned in the event of said suit.

In witness whereof I hereunto set my hand this — day of July, 1884.

ANNA TAYLOR,
Special Examiner by Order of Court.

Appendix.

Exhibits Referred to in Complainants' Evidence.

(Complainants' Exhibit Complainants' Patent.)

United States Patent Office.

Alexander C. Martin, of Hamilton, Ohio.

Improvement in Furniture Casters.

Specification forming part of Letters Patent No. 190,152, dated May 1, 1877; application filed September 16, 1876.

To all whom it may concern:

Be it known that I, Alexander C. Martin, of Hamilton, Ohio, have invented an improved caster, of which the following is a specification.

This invention relates to swiveling casters, and the objects of the invention are to secure in such casters freedom from pivotal wear of carpet or floor and increased mobility in swiveling.

The first object is attained by the use of two floor wheels whose axes are coincident, in connection with devices which insure the contact of both wheels with the floor, regardless of ordinary irregularities of floor surface.

The second object of the invention is a natural result of the suppression of floor friction.

In the accompanying drawing, Fig. 1 is an elevation of my improved caster. Part of Fig. 1 is a vertical section. Fig. 2 is a side elevation, and Fig. 3 is a part elevation, exhibiting the portion cut away in Fig. 1.

Common casters in swiveling pivot upon the floor. The

A. C. MARTIN. 26

FURNITURE CASTER.

No. 190,152. Patented May 1, 1877.

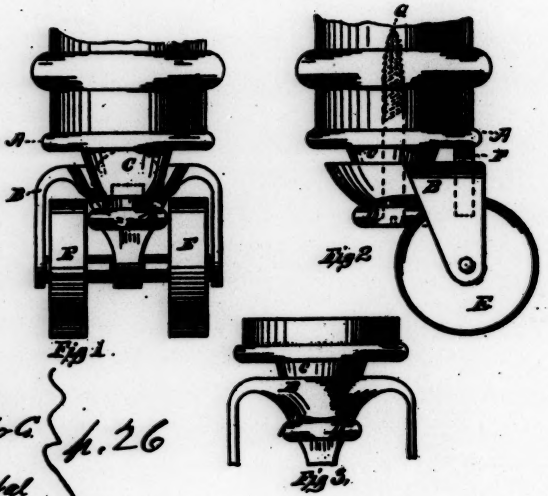


Fig 1. Fig 2. Fig 3.

No. 150.
Furniture Caster C.
p. 26
Spiegelthal

Witnesses:
A. D. Davidson
S. L. Boeler

Inventor:
Alexander C. Martin
by Jaquith & Co.
his attys.

Complainants Exhibit
Complainants Patent
Amos Taylor
Examiner

point of pivot motion is the point of contact between wheel and floor. Such pucker and wear carpets, and are sluggish in their swiveling action. Two rollers side by side will, in swiveling, turn in opposite directions, and it will be found that they roll upon the floor instead of pivoting, as does the single wheels; but if the floor should be irregular, as is often the case, one wheel of the pair would not touch the floor, and the two-wheeled caster would become practically a one-wheeled caster.

My improvement consists in making the axis of the two wheels oscillatory with reference to the article to which the furniture caster is attached. The axis of oscillation, being at right angles to the floor wheels' axis, allows the wheels to accommodate themselves to ordinary inequalities of floor.

Referring to the drawing, A is a flange, from which depends the stem or boss C. This stem serves as a pivot for the swiveling motion, as a draft pin for the wheel-housing, and as a means of uniting the parts.

The housing B furnishes bearing supports for the two floor wheels E E and the anti-friction pivot wheel F. The latter wheel is situated centrally between and vertically above the floor wheels. The housing swivels upon the stem in the usual manner. Were only a swiveling motion of the housing desired, its fit upon the central pivot might be close, allowing only looseness enough for the swiveling action; but the object sought by my improvement demands that the housing should have a compound motion with reference to the central pivot. It must revolve upon a vertical axis and oscillate upon a horizontal axis.

This compound bearing is formed by making the housing bearing slightly elliptical and the housing collar bearing in rocker form, as shown in Fig. 3.

The rocker may be on the side of the hole nearest the anti-friction wheel or on the opposite side, and the axis of the rocker should be in line with and a continuation of the axis of the anti-friction wheel F, so that the anti-friction wheel may not impede the oscillating motion.

By means of the relief resulting from the elliptic nature of the housing opening and the rocker bearing freedom for oscillation is secured without interfering with the functions of the central pivot as a bearing of rotation, draft pin, and means of union.

I claim as my invention—

A furniture-caster composed of the following elements: The floor wheels E E, the anti-friction pivot wheel F, the housing B, the elliptical housing opening or its mechanical equivalent, and the rocker-formed collar bearing or its mechanical equivalent, all combined so as to allow the floor-wheel axis to oscillate horizontally, substantially as and for the purpose specified.

ALEXANDER C. MARTIN.

Witnesses:
A. MYERS.
MARTIN A. EISELE.

(Here follows diagram marked p. 26.)

27 (COMPLAINANTS' EXHIBIT MARTIN ASSIGNMENT.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of an instrument of writing executed by Alex. C. Martin, William H. Tucker, Henry Sohn, Robert S. Dorsey, and George A. Rentschler December 29, 1877, and recorded in Liber T 25, p. 381. Said record has been carefully compared with the original, and is a correct transcript thereof.

In testimony whereof I, R. G. Dyrenforth, acting Commissioner of Patents, have caused the seal of the Patent Office to be [SEAL.] affixed this 17th day of September, in the year of our Lord one thousand eight hundred and eighty-four, and of the Independence of the United States the one hundred and ninth.

R. G. DRYENFORTH,
Acting Commissioner.

This agreement, entered into at Hamilton, Butler county, and State of Ohio, by and between Alexander C. Martin, for and in behalf of himself, his heirs, executors, administrators, and assigns, of the first part, and William H. Tucker, Henry Sohn, Robert S. Dorsey, and George A. Rentschler, jointly and severally, for and on behalf of themselves, their and each of their heirs, executors, administrators, and assigns, of the second part, witnesseth: That whereas letters patent of the United States for an improvement in casters were issued to the party of the first part, dated May 1st, 1877, No. 190,152 United States patent; and whereas the parties of the second part are desirous of acquiring an interest in said patent: Now, therefore, the parties have agreed as follows:

First. That the party of the first part is, at the time of making this agreement, the sole and exclusive proprietor and owner of said patent.

Second. That, for and in consideration of one thousand and seven hundred dollars ($1,700) to him paid by the parties of the second part, the receipt of which is hereby acknowledged, and other considerations hereinafter specified, the said party of the first part hereby sells, assigns, transfers, and sets over unto the said parties of the second part all the right, title, and interest whatsoever which said party of the first part has in said improvement in casters and in and to the letters patent aforesaid and in and to any and all patentable improvements in casters which said first party may hereafter make within the life of said patent, all reasonable expenses incurred in making said improvements and in obtaining patents for the same to be paid by said second parties, and the same to be held and enjoyed by the said parties of the second part, for their own use and behoof and for the use and behoof of their legal representatives, to the full end of the term for which said letters patent were, are, or

may be granted, thus including all extensions as fully and entirely as the same would have been held and enjoyed by the party of the first part had this assignment and sale not been made, said parties of the second part agreeing to sell to said party of the first part what casters he may need to apply upon a lamp-stand and sewing-machine caster arrangement as now made by the party of the first part at fifteen per cent. less than their wholesale prices as made to other parties.

Third. That said party of the first part will sign, without any further consideration, any lawful papers pertaining to the securing of foreign patents upon said improved caster, and, upon presentation, any papers necessary to secure to the parties of the second part full ownership in said patent, it being understood that all expenses in any way attending the issue of said patents shall be borne by said parties of the second part.

Fourth. That, as a further consideration, * * * the said parties of the second part will pay to the said party of the first part during the full term of said United States patent and any
28 extension thereof the sum of four cents in money for and on each set of said casters made by said second parties, their heirs and assigns, during said term and extensions of the said United States patent, it being understood that four casters constitute a set of casters, said payments to be made quarterly, the provision of this section to apply to any and all said patentable improvements on said casters referred to in section second of this contract.

Fifth. That the said parties of the second part will, within thirty days after the end of each quarter next after January 1st, 1878, render to the said party of the first part a sworn statement of the full number of casters made by them, the parties of the second part, during that quarter, and will, within the same time, pay to said first party the four cents on each set of casters so made by said second parties during said quarter, as provided in section fourth of this contract; and said parties of the second part agree to keep regular books of account of their manufacture and sale of said casters, which said books shall be at all times open to the inspection of said first party or his authorized agent or attorney; and said first party shall have the right, whenever he may deem proper and necessary for his protection during the life of this contract, to stamp or cause to be stamped each and every caster so made before the same are offered for sale or shipped, and said second parties agree at all times to give him all facilities for putting on said stamps.

Sixth. That if the consideration provided for in section fourth of this agreement shall not amount during the eleventh and twelfth quarters after the 1st day of January, 1878, to at least the aggregate of three dollars per day for each week day in each of said quarters, respectively; during the thirteenth and fourteenth quarters to at least three dollars and fifty cents per day, and during the fifteenth and each and every succeeding quarter during the term of said United States patents and the extensions thereof to at least four dollars per day for each week day in said quarters, respectively, and should the number of said sets of casters made by said party of the

second part during any one of the said quarters multiplied by four cents not amount to or equal the sums of money indicated or arrived at by multiplying the number of week days in any such quarter by the number of dollars and fractions thereof hereinbefore provided for such quarter in this section, then the said parties of the second part will pay to the said party of the first part, within thirty days after the end of any such quarter, in addition to the said four cents on each set of casters so made in such quarter, a sum of money equal to the difference between the aggregate of said four cents per set of casters and the aggregate sum of said *per diem* in any such quarter; but nothing in this section shall be constructed as limiting said party of the first part to any said *per diem* or to lessen his right to receive four cents on each set of casters so made by the said parties of the second part, their heirs and assigns, as hereinbefore provided, should said four cents per set of casters made in any quarter exceed the said *per diem* provided for such quarter.

Seventh. That the party of the second part will cause all casters made under this agreement to be plainly marked as follows: "Martin's pat., May 1, 1877."

Eighth. That the parties of the second part, while they are engaged in making said casters as hereinbefore specified, will not engage in the manufacture and sale of other casters, except common casters, such as are now in the market, without the written consent of the party of the first part or his legal representatives, as hereinbefore specified.

Ninth. That in case of failure on the part of parties of the second part to faithfully fulfill any and all of the stipulations and provisions of this contract on their part to be performed, then, and at the time of said failure to fulfill any and all of said stipulations and provisions, the second section of this agreement, insomuch as it refers to the assignment of said letters patent as hereinbefore mentioned, shall be null and void, and the same shall revert back to the first party and be revested in him the same as if said assignment had never been made and entered into.

29 Tenth. The parties of the second part agree to pay the royalty named in this contract on all casters shipped by the parties of the second part or their agents into Canada or any other foreign countries.

In testimony whereof we have hereunto set our hands and affixed our seals in duplicate this 29th day of December, A. D. 1877.

ALEX. C. MARTIN.	[SEAL.]
WILLIAM H. TUCKER.	[SEAL.]
HENRY SOHN.	[SEAL.]
ROBERT S. DORSEY.	[SEAL.]
GEORGE A. RENTSCHLER.	[SEAL.]

In the presence of H. L. Morey as to Robert S. Dorsey; J. E. Morey, John M. Long, and H. L. Morey as to Martin, Tucker, Sohn, and Rentschler.

COMPLAINANTS' EXHIBIT PHŒNIX CASTER CO. ASSIGNMENT.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of an instrument of writing executed by W. H. Tucker, James T. Layman (executor), Kate L. Dorsey, Henry Sohn, and G. A. Rentschler December 14, 1883, and recorded in Liber A 31, p. 201. Said record has been carefully compared with the original and is a correct transcript thereof.

In testimony whereof I, R. G. Dyrenforth, acting Commissioner of Patents, have caused the seal of the Patent Office to be affixed this 17th day of September, in the year of our Lord one thousand eight hundred and eighty-four, and of the Independence of the United States the one hundred and ninth.

[SEAL.]

R. G. DYRENFORTH,
Acting Commissioner.

Whereas, on the 1st day of May, 1877, Alexander C. Martin, of Hamilton, Ohio, procured letters patent of the United States of America for an improvement in furniture casters, numbered 190,152; and

Whereas afterward, on the 29th day of December, 1877, the said Alexander C. Martin, by an assignment in writing under his hand and seal, assigned and conveyed to William H. Tucker, Henry Sohn, Robert S. Dorsey, and George A. Rentschler all the right, title, and interest of him, the said Martin, in and to said letters patent in consideration of the sum of seventeen hundred dollars in cash and other considerations named in said assignment, which was duly recorded in Liber T 25, page 381, of the Transfers of Patents in the Patent Office of the United States, on the 9th day of August, 1880; and

Whereas, after the execution of such assignment, the said assignees, Tucker, Dorsey, Sohn, and Rentschler, carried on the business of making and selling furniture casters of the kind described in said Martin's letters patent at Indianapolis, Indiana, and at Hamilton, Ohio, under the firm name and style of the Phœnix Caster Company; and

Whereas, in the year 1883, the said Tucker, Dorsey, Sohn, and Rentschler organized and incorporated as a corporation, under and in pursuance of the laws of the State of Indiana, for the manufacture and sale of furniture casters and other devices for the furtherance of their common interests and to secure the uninterrupted continuance of the business in case of the death or permanent disability of any of them; and

Whereas, after such incorporation had been duly perfected under the name of the Phœnix Caster Company, and in accordance with the laws of the State of Indiana, the said Robert S. Dorsey, one of the assignees aforesaid, died, and before any assignment or transfer

of any rights to the newly incorporated company under said letters patent and the assignment thereof had been made by the said assignees; and

Whereas it was the intention of said Tucker, Dorsey, Sohn, and Rentschler to make to the newly incorporated company a full and complete assignment of all their rights, title, and interest in and to said letters patent and the invention therein described, and receive in consideration thereof paid-up certificates of stock in said corporation to the amount of their several interests in said assignment, and only the severe illness and subsequent death of said Dorsey prevented such intention from being carried out; and

Whereas, under the last will and testament of said Robert S. Dorsey, his widow, Kate L. Dorsey, was and is the sole legatee, and James T. Layman was constituted sole executor, and has duly qualified as such and entered upon his duties; and

Whereas it is now desirable that the original intention of the parties incorporating the Phœnix Caster Company should be carried out, and all rights heretofore accrued or hereafter to accrue should be duly assigned to said company so as to vest the title in and to said letters patent and the invention therein described in the newly incorporated company:

Now, therefore, in consideration of the premises and of the receipt by us of certificates of stock in said Phœnix Caster Company to the amount of sixteen thousand dollars, in the proportion of four-tenths to the executor of said Robert S. Dorsey, one-tenth to William H. Tucker, and five-tenths to Henry Sohn and George A. Rentschler, we, the aforesaid William H. Tucker, James T. Layman, as executor of Robert L. Dorsey; Kate L. Dorsey, Henry Sohn, and George A. Rentschler, have sold and assigned and do hereby sell, assign, and convey to the Phœnix Caster Company of Indianapolis, Indiana, all and singular our rights, titles, interests, and claims in and to letters patent of the United States numbered 190,152, issued to Alexander C. Martin on the 1st day of May, 1877, for an improvement in furniture casters, as the same was assigned and conveyed to William H. Tucker, Robert S. Dorsey, Henry Sohn, and George A. Rentschler by the deed of Alexander C. Martin, dated December 29, 1877, hereinbefore mentioned; and do further assign and convey to the said The Phœnix Caster Company all royalties, damages, and money demands which may have heretofore accrued to us or either of us from any person or persons whatsoever, either by reason of any infringements upon our rights or arising from any other cause whatever; and we do hereby fully authorize and empower the said The Phœnix Caster Company to cause her name to be substituted as complainant in any case now pending in any court whatever in place of the names of said Tucker, Dorsey, Sohn, and Rentschler, the original assignees of said Martin, and to prosecute any such suit to final determination in her corporate name, and to have, receive, and enjoy all rights thereunder for her own use and behoof in as full and ample a manner as the same could have been held, received, or enjoyed by us; and we do further authorize and empower the Phœnix Caster Company, in her own name and for

her own exclusive use and behoof, to institute and prosecute any suit or suits in any proper court for the recovery of any damages, gains, or profits which may have heretofore accrued to us or in our favor against any and all persons who may have infringed our rights.

And we do further hereby assign and transfer unto the said The Phœnix Caster Company all and singular all other property heretofore belonging to the partnership known as the Phœnix Caster Company, personal or real, goods, chattels, and choses in action, of every sort and description whatsoever.

All rights hereby granted under said letters patent to be held and enjoyed by the said corporation, the Phœnix Caster Company, in as full and ample manner as the same could have been held and enjoyed by us or either of us if this assignment had not been made, and for the full end of the term of said letters patent.

31 In witness whereof we have hereto set our hands this 14th day of December, 1883.

W. H. TUCKER. [SEAL.]
JAMES T. LAYMAN, [SEAL.]
(*Executor of Robert S. Dorsey, Deceased*).
KATE L. DORSEY. [SEAL.]

In the presence of H. C. Holloway, S. B. Cary, witnesses to signatures of W. H. Tucker, J. T. Layman, and Kate L. Dorsey.

HENRY SOHN. [SEAL.]
G. A. RENTSCHLER. [SEAL.]

Fred. Doeller and Rob't L. Griffith, witnesses to signatures of Henry Sohn and George A. Rentschler.

(COMPLAINANTS' EXHIBIT PROBATE LETTERS.)

I, Robert S. Dorsey, of the city of Indianapolis, Indiana, do make and declare this my last will and testament:

I give and bequeath to my wife, Catharine L. Dorsey, all my property of every name, kind, and description, whether real, personal, or mixed, and wherever situate, to have and to hold as her own absolutely. I hereby appoint James T. Layman as the executor of this my last will and testament.

I hereby revoke any and all other wills by me at any time heretofore made.

In witness whereof I hereunto subscribe my name this 18th day of November, 1882, in the presence of Abram W. Hendricks and Albert Baker, called by me as attesting witnesses hereto.

ROBERT S. DORSEY.

Subscribed by us as attesting witnesses in the presence of said testator, at his request, and in the presence of each other this 18th day of November, 1882, and signed by him in our presence.

A. W. HENDRICKS.
ALBERT BAKER.

STATE OF INDIANA, *County of Marion,* } ss:

Before the Marion circuit court of the county of Marion, in the State of Indiana, personally came Abram W. Hendricks and Albert Baker, subscribing witnesses to the foregoing instrument of writing, who, being first duly sworn, upon oath depose and say that Robert S. Dorsey, the testator named in the instrument of writing purporting to be his last will and testament, did sign, seal, publish, and declare the same to be his last will and testament on the day of the date thereof; that the said testator was at the said time of the full age of twenty-one years and of sound and disposing mind and memory, and that he was under no coercion, compulsion, or restraint, and that he was competent to devise his property, and that the said testator so signed, sealed, published, and declared the same to be his last will and testament, in manner and form as aforesaid, in the presence of affiants, the subscribing witnesses thereto, and that they each attested the same and subscribed their names as witnesses thereto in the presence and at the request of said testator and in the presence of each other.

A. W. HENDRICKS.
ALBERT BAKER.

[SEAL.] Subscribed and sworn to in open court, in witness of which I, Moses G. McLain, clerk of said court, hereunto affix the seal of said court and subscribe my name, at Indianapolis, this 12th day of December, A. D. 1883.

M. G. McLAIN, *Clerk.*

STATE OF INDIANA, *Marion County,* } ss:

I, Moses G. McLain, clerk of the circuit court of the county of Marion, in the State of Indiana, do hereby certify that the foregoing last will and testament of Robert S. Dorsey has been duly admitted to probate before the said court; that the same was proven by the examination under oath of Abram W. Hendricks and Al-
32 bert Baker, the subscribing witnesses thereto, and that a full and complete record of the said will and of the proof and examination of the witnesses by whom the same was proven has been made and is now of record in Will Record "H" of said county, on pages 264 and 265.

[L. S.] In testimony whereof I have hereunto affixed the seal of the said court and subscribed my name, at Indianapolis, this 12th day of December, A. D. 1883.

M. G. McLAIN, *Clerk.*

I, Moses G. McLain, clerk of the circuit court for the county of Marion, in the State of Indiana, do certify the annexed to be a true copy of the last will of Robert S. Dorsey, late of said county, deceased, and of the certificate of probate as endorsed thereon; and James T. Layman, having duly qualified and given bond, as required by law, as executor, is duly authorized to take upon himself the administration of said estate according to such will.

[SEAL.] Witness my hand and the seal of said court the 6th day of September, 1884.

MOSES G. McLAIN, *Clerk.*

(COMPLAINANT'S EXHIBIT CORPORATE ARTICLES.)

Certificate.

STATE OF INDIANA, *Office of Secretary of State,* } ss:

I, W. R. Myers, secretary of state of the State of Indiana, do hereby certify that the annexed articles of incorporation of the "Phœnix Caster Company" is a true and complete copy on file in the office of the secretary of state January 18th, 1883, and is so recorded and upon file in said office.

[SEAL.] In witness whereof I have hereunto set my hand and affixed the seal of the State of Indiana, at the city of Indianapolis, this 6th day of September, A. D. 1884.

W. R. MYERS,
Secretary of State.

Certificate for Incorporation of the Phœnix Caster Company of Indianapolis, Indiana.

The undersigned, citizens of the States of Indiana and Ohio, desiring to form a manufacturing company under and in pursuance of an act of the General Assembly of the State of Indiana, entitled An act for incorporation of manufacturing and mining companies and companies for mechanical purposes, approved May 20, 1852, and the various acts supplemental thereto and amendatory thereof, do now, in accordance with the requirements of the first section of said act, make, sign, and acknowledge a certificate for incorporation under said act—that is to say:

First. The incorporate name shall be "The Phœnix Caster Co."

Second. The object of its formation is to manufacture furniture and truck casters and other hardware specialties.

Third. The amount of the capital stock is one hundred thousand dollars ($100,000), which shall be divided into shares of fifty dollars ($50.00) each.

Fourth. The term of existence of the company shall be twenty-five years.

Fifth. The company affairs shall be managed by four directors, who shall be annually chosen from and by the stockholders on the second Tuesday in January of each year: Provided, That Robert S. Dorsey, William H. Tucker, Henry Sohn, and Geo. A. Rentschler shall be directors and manage the affairs of the company for the first year.

Sixth. The operations of the company shall be carried on and its principal office is located in the city of Indianapolis, Marion county, State of Indiana.

33 In witness whereof we have hereunto set our hands, at Indianapolis, Ind., this 18th day of January, 1883, this instrument being executed in duplicate, as required by law.

ROBERT S. DORSEY.
HENRY SOHN.
GEO. A. RENTSCHLER.
WILLIAM H. TUCKER.

STATE OF INDIANA, *Marion County,* } *ss:*

Before the undersigned, a notary public in and for the county of Marion, State of Indiana, personally came Robert S. Dorsey, Henry Sohn, George A. Rentschler, and William H. Tucker, the subscribers to the foregoing instrument, and severally signed and acknowledged the execution thereof as their free act and deed for the purposes therein set forth.

[SEAL.] Witness my hand and official seal this 18th day of January, 1883.

CHARLES S. SPRITZ,
Notary Public.

STATE OF INDIANA, *Marion County,* } *sct:*

I, Jacob L. Bieler, recorder in and for said county, do hereby certify that the above and foregoing is a true, full, and complete copy of the record of the articles of association of the Phœnix Caster Company of Indianapolis, Ind., as the same now appears of record in the recorder's office of Marion county, in the State of Indiana, in Miscellaneous Record No. 5, at page 619.

[SEAL.] In witness whereof I hereunto set my hand and official seal, at Indianapolis, this 8th day of July, 1884.

J. L. BIELER,
Recorder of Marion County, Indiana.

(COMPLAINANTS' EXHIBIT KINGMAN DECREE.)

In the Circuit Court of the United States, District of Indiana. May Term, 1883.

FRIDAY, *May 4th, A. D.* 1883.

Before Honorable Thomas Drummond, judge.

WILLIAM H. TUCKER, ROBERT S. DORSEY, HENRY SOHN, and GEORGE A. RENTSCHLER
vs.
NELSON KINGMAN. } Chancery.

Now come the complainants, by C. P. Jacobs, Esq., their solicitor, and move the court to set this cause down for final hearing and decree upon the default of the defendant and decree *pro confesso*, heretofore entered on the 5th day of February, 1883; which motion is now granted.

And thereupon the complainants produce before the court oral and documentary evidence and the exhibit of mechanical devices, from which the court finds as follows:

First. That Alexander Martin, of Hamilton, Butler county, Ohio, was the first and original inventor of an improvement in furniture casters, and that letters patent of the United States were issued to him therefor on the 1st day of May, 1877, numbered 190,152, and that said letters patent are good and valid.

Second. That on the 29th day of December, 1877, the complainants became and now are the owners of said letters patent for the entire territory of the United States, by assignment from said Alexander Martin, as set forth in the bill of complaint.

Third. That the defendant, Nelson Kingman, has infringed upon the complainants' rights under said letters patent and the assignment thereof to them by the sale of furniture casters manufactured under and in accordance with certain letters patent issued to Martin B. Schenck, of Fulton, New York, on the 29th day of November, 1881, and numbered 250,290.

34 Fourth. That on the 23d day of October, 1882, the complainants, by counsel, addressed a written notice to said Schenck, notifying him that the casters as made and sold by him were infringements upon the Martin patent, No. 190,152, and requested him to desist from the manufacture and sale thereof; that such notice was enclosed in a sealed envelope, addressed M. B. Schenck, Fulton, N. Y., the postage prepaid by the affixing of the proper stamp, and deposited in the post office at Indianapolis, Ind., the same day.

Fifth. That on the 14th day of February, 1883, and after the entering of the default of defendant Kingman in this case, the complainants, by counsel, wrote a letter to M. B. Schenck, Fulton, N. Y., informing him that a default had been entered in this case and agreeing to grant him thirty days longer in which to file an answer and make a defense to this suit, and notifying said Schenck that unless he should now proceed to make such decree they should regard it as a concession on the part of him, said Schenck, that the casters made by him were an infringement upon complainants' patents. That this letter was put in a sealed envelope, addressed to said M. B. Schenck, at Fulton, N. Y., the postage prepaid, and deposited in the post office at Indianapolis, Ind., the same day.

Sixth. That the complainants are entitled to a perpetual injunction against the defendant Kingman, as prayed in the bill of complaint.

Seventh. That inasmuch as the sales by the defendant Kingman were few in number that the defendant [complainants] (they now waiving any reference to a master to compute damages) are entitled to recover of defendant nominal damages—one dollar—and all the costs of this action, taxed at — dollars.

It is therefore ordered, adjudged, and decreed by the court that the defendant, Nelson Kingman, be perpetually enjoined from making, selling, or using any furniture casters like or similar to those described in the said Schenck letters patent No. 250,290, or like or

similar to those he has heretofore sold, and that he pay to complainants the sum of one dollar damages and all the costs of this action, and that in default thereof execution issue therefor as at law, collectible without any relief from valuation or appraisement laws.

All of which is finally ordered, adjudged, and decreed.

In the Circuit Court of the United States, District of Indiana.

UNITED STATES OF AMERICA, *District of Indiana,* } *ss:*

I, Noble C. Butler, clerk of said court for said district, do hereby certify that the above and foregoing is a full, true, and complete copy of the order of said court made and entered of record in my office on the 4th day of May, A. D. 1883, in the cause entitled William H. Tucker *et al. v.* Nelson Kingman, No. 7529.

[SEAL.] Witness my hand and the seal of said court, at Indianapolis, in said district, this 7th day of May, A. D. 1883.

NOBLE C. BUTLER, *Clerk.*

(COMPLAINANT'S EXHIBIT SCHENCK PATENT.)

UNITED STATES PATENT OFFICE.

MARTIN B. SCHENCK, of Fulton, New York.

Caster.

Specification forming part of Letters Patent No. 250,290, dated Nov. 29, 1881; application filed Oct. 22, 1881. (Model.)

35 To all whom it may concern:

Be it known that I, Martin B. Schenck, a citizen of the United States, residing at Fulton, in the county of Oswego and State of New York, have invented an improvement in casters, of which the following is a specification.

The subject of this invention is a caster with two floor wheels, the bearing frame or housing of which is provided with an anti-friction roller, preferably located directly over the axis of the floor wheels, running on the under surface of a track plate, by which the caster may be secured to a truck or to the leg of any article of furniture. In the center of the attaching track plate is a hemispherical bowl or concavity, forming a projecting boss on the under side, in the center of which is a cylindrical opening for the reception of a rigid stud projecting upward from the wheel frame, said rigid stud constituting the vertical pintle on which the caster turns and the connection by which draft is applied from the attaching plate to the swiveled wheel frame. The wheel frame is attached to the track plate by means of a pin passed downward through the hollow stud and there secured, said pin having a head convex on the under side; or it may be a hemispherical head, so as to form, in connec-

tion with the bowl of the track plate in which it rests, a universal or ball-and-socket joint, the aperture in the bottom of the bowl being of sufficient size to afford free play in all directions.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which Fig. 1 is a front view of my improved caster. Fig. 2 is a side view. Fig. 3 is a vertical section on the line 3 3, Fig. 1. Fig. 4 is a similar section, illustrating a modification. Fig. 5 is an under-side view of the attaching or track plate.

A represents a track plate to be secured to the bottom of a truck or to the leg of any article of furniture to which the caster is to be applied. In the center of this plate is a downwardly projecting bowl, B, of approximately spherical form, with an aperture, *b*, in its bottom.

C represents the housing or wheel frame of the caster. It is constructed with suitable lugs, *c c c*, between which the two floor wheels E E are confined, the said wheels running upon a horizontal pintle, F, extending through their hubs and through apertures prepared for them in the lower ends of the lugs *c*. The upper part of the housing or wheel frame C is constructed with a hollow stud, D, extending upward within the aperture *b* of the bowl B, and forming the vertical pivot of the caster frame and the means by which it is drawn when the truck or furniture to which it is attached is moved. The wheel frame or housing C is attached or secured to the track plate A by a pin, G, fixed by riveting or otherwise in the aperture of the hollow stud D, and having a head, *g*, resting in the depression B, and made convex on the under side, so as to afford the necessary lateral rocking motion to the frame.

The anti-friction wheel H is located over, or nearly over, the horizontal axle or pintle F of the floor wheels E. It turns on a bolt or pin, I, and bears upward against the under surface of the track plate A.

The track plate may be made round, as represented in full lines in Fig. 5, the form of the pivoted frame affording convenient access to screw holes located at *a a*, within the track of the wheel H. This circular form of the plate avoids any projections which might obstruct the rotation of the frame; but, if preferred, the plate may have projecting lugs for the reception of screw holes, as illustrated in dotted lines.

The rigid stud, which projects upward from the housing to form the vertical axis thereof and receive the draft, may be formed in one piece with the pin which holds the parts together, as illustrated in Fig. 4, where G represents the said attaching pin and draft stud *g*, its convex head rocking in the bowl B, as before, and *d* an enlargement or extended cylindrical collar, formed on the said pin or stud, to occupy the aperture *b* of the bowl B, the lower end of which collar or enlargement constitutes a shoulder, against which
36 the upper face of the housing C is driven and secured in the act of riveting the lower end of the stud C permanently within it. It will be observed that by thus permanently fixing the stud or pin G within the housing C the said stud is caused to form,

in effect, a permanent and rigid part of the said housing. This result is further secured by the shoulder or enlargement *d*, forming a solid bearing between the stud and the housing, and being provided with a lip, *d*, to engage in a notch in the plate to prevent turning. Under this modification, as in the form of the invention first described, it will be observed that the draft is applied to the upper part of the caster frame through the projecting upper part of the rigid stud.

In order to prevent the outer part of the caster frame dropping when the truck or furniture is lifted from the floor, the said frame is provided with a rearwardly projecting tail piece, J, so nearly in contact with the track plate A that it will rest against it the moment the anti-friction wheel H drops therefrom.

I prefer to place the anti-friction wheel H directly over the floor-wheel axis, so that the caster will be balanced without any material upward or downward strain while in use. By thus balancing and centering the caster, I avoid the binding and friction on the center pintle which are caused by placing the anti-friction wheel on either side of the floor-wheel axis, as is the case with some double floor-wheel casters heretofore devised and used.

It will be observed that my improved caster avoids the projection of any vertical stud or pintle below the caster frame, and that the draft is applied directly to the upper part of the caster frame instead of, as in some other casters, to the lower part of the vertical stud or bearing, which thus acts disadvantageously as a long lever, rendering it extremely liable to break the track plate or draw out the screws by which it is attached. The entire depth from the top of the attaching plate to the bottom of the central part of the caster frame is materially reduced by my improvement, and the entire device rendered more compact.

These improvements are of great practical importance in the working of the caster, enhancing both its strength and durability, and also in the appearance of the caster, rendering it much more neat and sightly.

Having thus described my invention, what I claim as new and desire to secure by letters patent is the combination of the attaching track plate A, formed with a centering aperture, *b*, the housing C, having an upwardly projecting rigid stud engaging in the aperture *b* and a connecting rivet, the two floor wheels E, and the anti-friction wheel H, all substantially as set forth.

MARTIN B. SCHENCK.

Witnesses:
J. J. WRIGHT.
O. SEELY.

(Here follows diagram marked page 37.)

(Model.)

M. B. SCHENCK.

CASTER.

No. 250,290. Patented Nov. 29, 1881.

Fig 1

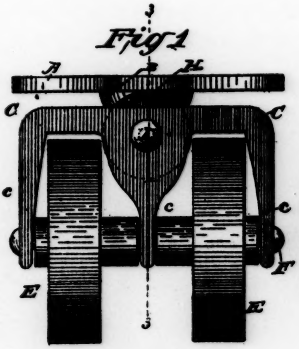


Fig 2

No. 150.
Pennsylvania Caster Co. v. Spiegel et al
6.37

Fig 3.

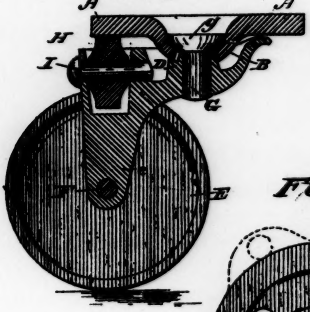


Fig 4.

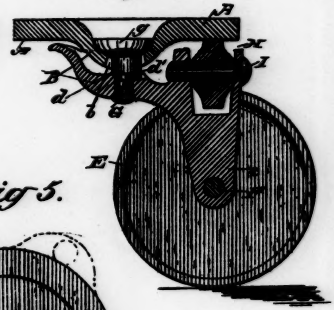
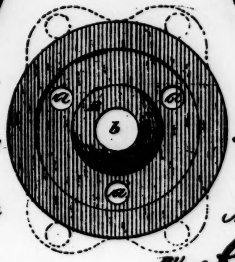


Fig 5.



Attest
Geo. T. Smallwood Jr
Edm. Hopkinson.

Inventor:
Martin B. Schenck
By Knight Bros
Attys

Complainants Exhibit
Schenck Patent
Anna Taylor
Examiner

THE YALE CASTER,

—FOR—

FURNITURE OF ALL KINDS, BOOK CASES, REFRIGERATORS, SHOW CASES, PIANOS, STORE AND WAREHOUSE TRUCKS, AND ANYTHING THAT NEEDS A CASTER.

(No. 20 FULL SIZE.)

PATD. OCT. 9, 1877.

DESIGN AND OTHER PATENTS PENDING.

YALE CASTER COMPANY,

MANUFACTURERS OF

YALE CASTER, GEM STOVE TRUCK AND HARDWARE SPECIALTIES.

NEW HAVEN, CONN.

38 ☞ Very important improvements in two-wheel casters.

A WORD TO THE TRADE ON THE MERITS OF THE YALE CASTER.

A two-wheel caster has important advantages over the common one-wheel caster. The load is carried by a larger number of wheels, and the pivotal action of the single-wheel caster, whereby carpets are destroyed, is entirely overcome. In turning both wheels will roll ahead, or one will roll backward and the other forward.

By the introduction of friction wheels, as in the Yale caster, the binding friction at the central stem is entirely overcome, as the load is removed to the friction wheels. Their action is very sensitive, and they turn promptly and easily. Casters with two floor wheels and one friction wheel have been long in use. With such the entire load is carried on one edge of the plate, and the axis of the floor wheels must necessarily be brought out to a line directly under the friction wheel.

One of our improvements consists in the use of two friction wheels, placed on opposite sides, instead of one, as heretofore used. This admits of the floor wheels being set back nearer the center of the caster and gives a bearing on each side to both plate and frame.

39 It relieves the strain on the screws and other parts. It makes it absolutely frictionless. It removes the serious objection of clumsiness, and admits of our neat and graceful wheel-frame pattern with round front—a very noticeable improvement over the old pattern of square-frame casters.

Our devices for the adjustment of the wheels to uneven floors and for turning on the center are entirely new. They are the simplest form of a universal joint, and add greatly to the strength and action of the caster. The usual long stud projecting down through the center is superseded by a strong short stud, and the draft of the caster is applied near the base of the plate. This caster is not taken in pieces to apply to furniture, and cannot by its own action, unscrew and come apart in use. All the wheels are "chucked" and drilled, and no pains spared in their mechanical or artistic construction to make the Yale caster perfect in every respect.

UNITED STATES PATENT OFFICE.

SEBASTIAN KONZ, of Louisville, Kentucky, assignor of one-half his right to Paul W. Carle, of same place.

Improvement in Furniture Casters.

Specification forming part of Letters Patent No. 196,024, dated October 9, 1877; application filed August 6, 1877.

To all whom it may concern:

Be it known that I, Sebastian Konz, of Louisville, Jefferson county, State of Kentucky, have invented an improvement in furniture casters, of which the following is a specification.

THE YALE CASTER,

—FOR—

FURNITURE OF ALL KINDS, BOOK CASES,
REFRIGERATORS, SHOW CASES, PIANOS;
STORE AND WAREHOUSE TRUCKS,
AND ANYTHING THAT NEEDS A CASTER.

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Improvement in Furniture Casters.

Specification forming part of Letters Patent No. 196,024, dated October 9, 1877; application filed August 6, 1877.

To all whom it may concern:

Be it known that I, Sebastian Konz, of Louisville, Jefferson county, State of Kentucky, have invented an improvement in furniture casters, of which the following is a specification.

My invention relates to certain improvements which I have made upon the furniture caster for which a patent was granted me, dated June 20, 1876, No. 178,857, and consists, first, in the novel devices by which the upper part of the caster is connected with the lower portion, which contains the friction rollers and the ball roller, in such a manner that such lower portion can revolve horizontally; secondly, in the combination of a hollow screw shaft, which is screwed into the leg of the article of furniture, and having a set screw in its top end and an interior revolving shaft designed to revolve within the screw shaft, it being provided in its upper end with a concave hardened bearing for the set screw, so that when the lower part of the caster revolves within the upper the only point of frictional contact (except the connecting screw before mentioned) will be that point of the pivot screw and that bearing, and thus the friction will be diminished; and, thirdly, to the peculiar construction and mounting of a pair of friction rollers in the lower portion of the caster and cutting away the middle portion of the rollers in such a manner that the ball roller will come in contact with the outer ends only, and thus friction between them and the ball will be greatly diminished, all of which devices will be hereinafter more fully described and definitely claimed.

(Here follows diagram marked page 40.)

40 Referring to the accompanying drawings, figure 1 represents an elevation of a caster embracing in its construction my improvement; Fig. 2, a central vertical section of the same; Fig. 3, a perspective view of the interior shaft and roller frame inverted, and Fig. 4, a detail view of the ball roller in connection with a friction roller in an inverted position.

A is the base or cylinder and B the hollow screw shaft extending up from the center of the upper end thereof. L and M indicate the cup form for receiving the leg of a piece of furniture; K, the pivot screw, fastened in the top of the screw shaft by means screw heads, as shown, and provided with a blunt point at the lower end, and G is the revolving interior shaft, provided at its upper end with a concave hardened bearing to turn against the point of the screw pivot K, and containing a little lubricating oil. F is the short interior cylinder which, together with the jaws N, constitutes the frame for the friction rollers D D, and J and J represent the shoulders,
41 which alone come in contact with the ball roller E, the friction rollers being cut away at D and D. H H H are holes extending from the outside of the case or cylinder A, through it, and up through the base L, and are designed for the insertion of a suitable wrench to drive the shaft B into the piece of furniture, and also to enable one to ascertain when the bottom of the leg is flat upon the base L.

G^2 is the flat ring before mentioned, and, if made of proper size and thickness, will, when sprung onto the lower end of the cylinder, resist removal as much as may be desired and hold the ball E in place.

S. KONZ.

Furniture-Casters.

No. 196,024. Patented Oct. 9, 1877.

40

No. 150.
Phoenix
Caster Co.
to
Spiegelberg
M. 40

Fig. 1.

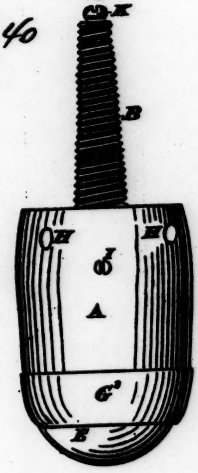


Fig. 2.

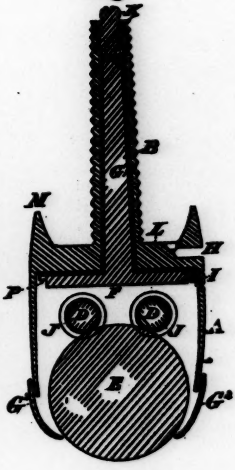


Fig. 3.

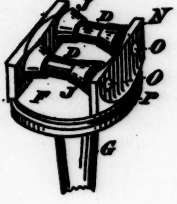
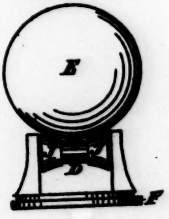


Fig. 4.



Witnesses,
Frank. Pardee.
Albert Steinmann

Inventor,
Sebastian Konz by
A. W. Stuart his atty

E. HOFFSTAETTER. 42

Caster for Furniture.

No. 196,017. Patented Oct. 9, 1877.

Fig. 1.

No. 150, Phoenix Casters $ 42 Spiegel sled

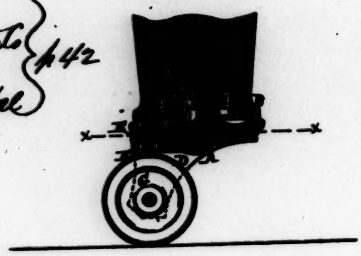


Fig. 2.

Witnesses.
Otto Schofield
Hugo Klinggemann

Inventor.
Ernst Hoffstaetter
by
Wm. Clarke & Sons
his attorneys

I is the set screw. It is screwed into and through the case A, and its flat point extends into the horizontal groove P in the short cylinder F, as shown in Figs. 2 and 3, and effectually confines the two portions of the caster together, but allows the lower to revolve within the upper, as before stated, and the object of the movement is that the friction rollers may automatically adjust themselves, so that their axles shall be parallel with the axis of motion of the ball roller E.

In moving the furniture the force is first exerted upon the ball, and then, through the ball, upon the friction rollers and their frame, which adjusts itself as before described.

What I claim as new and desire to secure by letters patent is—

First. The combination of the set screw I, working in a screw hole through cylinder A and having a square point, and the groove P, in the interior cylinder F, adapted to connect the lower revolving part and the upper part of the caster together and allow the requisite action, substantially as described.

Second. The combination of the screw pivot *k*, having a blunt or rounded point and being screwed into the upper end of screw shaft B, and the concave upper end of revolving shaft G, adapted to secure easy and true revolving motion of the lower part of the caster, substantially as described.

Third. The friction rollers D D, mounted in their revolving frame F N and cut away in the center in such a manner that only the shoulders J J will come in contact with the ball, in combination with ball roller E, adapted to secure easy motion of the said ball roller, substantially as described.

SN. KONZ.

Witnesses:
P. W. CARLE.
W. P. LINCOLN.

(COMPLAINANT'S EXHIBIT HOFFSTAETTER PATENT.)

UNITED STATES PATENT OFFICE.

ERNST HOFFSTAETTER, of New York, N. Y.

Improvement in Casters for Furniture.

Specifications forming part of Letters Patent No. 196,017, dated October 9, 1877. Application filed April 18, 1877.

To all whom it may concern:

Be it known that I, Ernst Hoffstaetter, of the city, county, and State of New York, have invented a new and useful improvement in furniture casters, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

(Here follows diagram marked p. 42.)

42 Figure 1 represents a vertical central section of a caster containing my improvement. Fig. 2 is a horizontal section thereof in the plane of the line *x x*, Fig. 1.

Similar letters indicate corresponding parts.

My improvement has reference to the construction of furniture casters, and consists in a center pin, which is provided with a head, and passed through a cap plate, which is adapted to be affixed to the lower end of a table leg or other article of furniture, while on the lower part of said center pin is arranged the roller frame of the caster, through which frame, as well as through the said center pin, is passed a transverse bolt in such a manner that the roller frame and center pin are thereby firmly held together; also in combining with the caster an anti-friction wheel, which is situated in an opening formed in the roller frame and mounted on the said transverse bolt, so as to form a bearing between the cap plate and the roller frame, as hereinafter more fully described and claimed.

43 In the drawing the letter A designates the center pin of my caster, on the upper end of which is formed a head, *b*, which, in the example shown, has a conical shape. B is a cap plate, through which the center pin A is passed, and which is provided with a cavity in its upper surface to receive the head *b* of said pin. This cap plate B, moreover, is provided with holes, so that it may be affixed to the lower end of a table leg or to any other article of furniture by means of screws or rivets and without materially weakening the leg.

When my caster is to be applied to a table leg or other like article a lateral flange or rim may be substituted for the holes in the cap plate B or added thereto, which said flange or rim is adapted to embrace the lower end of the leg.

The roller frame of my caster is composed of a plate, C, and a bracket, D, and it is mounted on the center pin A through the plate C. Now, the center pin A and the plate C of the roller frame are each provided with a transverse hole, through which is passed a bolt, E, the hole in the plate C being made to terminate a little beyond the center pin A on one side of the latter, and the bolt E being fastened at its inner end by means of a screw thread formed on the bolt and in said hole, as clearly shown.

It will be noticed that by means of the bolt E the roller frame C D and the cap plate B are held together, while they are, moreover, caused to turn with each other.

In the plate C is formed an opening, *a*, which intersects the bolt E, and in this opening is situated an anti-friction wheel, F, which is mounted loosely on said bolt. The anti-friction wheel F is of such diameter that it bears against the under surface of the cap plate B, and by its means the perfect working of the parts of my caster is insured.

In order to increase the effect of the anti-friction wheel F, I arrange the same in a vertical plane with the axis of the roller G of the caster, as shown in Fig. 1.

One of the advantages of my caster is that it is made without the usual socket, and hence does not weaken the table leg or other arti-

cle to which it may be applied. Another advantage is its simple construction and comparatively cheap cost.

What I claim as new and desire to secure by letters patent is—

First. The combination, in a caster, of a center pin, A, having a head, *b*, with a cap plate, B, roller frame C D, and a transverse bolt, E, passing through the center pin, substantially as described.

Second. The combination of an anti-friction wheel, F, with the transverse bolt E, and journaled thereon, the roller frame C D, cap plate B, and center pin A, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 17th day of April, 1877.

ERNST HOFFSTAETTER. [L. S.]

Witnesses:

J. VAN SANTVOORD.

E. F. KASTENHUBER.

(COMPLAINANT'S EXHIBIT YALE CASTER COMPANY'S LETTER.)

NEW HAVEN, CONN., *May* 19, 1883.

Phœnix Caster Company *et al.*:

GENTLEMEN: We have taken notice of your action in regard to our caster and stove-truck patents, and particularly the manner in which you anticipate our immediate destruction.

Your action shows that you are either luxuriating in a wealth of ignorance or that you suppose us to be or that you mean by dishonorable means to deceive, and that you intend by one overwhelming master-stroke to accomplish our immediate destruction. Perhaps you can do this and then perhaps you can't. Permit us to say, before consigning us to our final doom, that we may possibly have some knowledge of this patent subject which we haven't told everybody, and before assuming such immense proportions as you do to discover if such may not be the fact. During the past two years we have collected a little library of documents and a little museum of caster models, all bearing on this caster and stove-truck business. The result of our investigation is to convince us beyond
44 the possibility of a doubt that each and all the patents you are spreading yourselves so grandly on are not worth practically the paper they are written on. Your great and glorious "double-wheel caster," patented by Mr. Martin, was not the invention of Mr. Martin in none of its devices or combinations, separately or collectively. There is not a thing about it that was not old when Mr. Martin was young and that was not publicly known and used and on file in the Patent Office, in Washington, years before Martin made his application. It is not wholly necessary to take our word for this. We are now preparing engravings, and shall at once publish as prominently as you have your proclamation a series of articles and illustrations showing the absurdity of your pretentious claims. You have obliged us to do this by your dishonorable and selfish course, and when we get through you can compare it with

our statement above and will know whether it will do to trust our word next time.

The first of these illustrations will be the oldest one we have thus far found, and is the Mackelcan & Murdock English patent of 1840. There may be others older, but this will answer our purpose to commence on. This shows the double wheel and friction roller exactly as Martin "invented" nearly forty years later, and will, we imagine, clear up the case before the public so far as it goes. We shall then show, by not less than ten different casters, just as clearly Martin's subsequent "invention" of his "elliptical housing opening or its mechanical equivalent, and rocker-formed collar bearing or its mechanical equivalent," separately and in combination. We will try and find time and space to show Martin's desperate attempt to patent his "oscillating motion between the caster frame and attaching plate," and the proper snub his attorney received for his absurd claim. How exceedingly valuable it would have been if he could only have obtained it. It would have taught a mechanical world just how to patent "a result of function," something everybody is anxious to know. We will try to clear up the mystery you have so successfully shrouded it in. In our investigations we have taken the advice of the most competent counsel, not trusting to one alone, but to at least four separately, and each one informs us that there is not the shadow of a doubt on any of our patents or devices as against any of yours. Since your "straw" Kingman suit, which we shall also expose, we have again looked the matter over thoroughly and followed the advice of able counsel. Messrs. Sargent & Co., of this city, after a most thorough investigation, with the aid of his two able lawyers, while at first in some doubt on some points, wrote us that his lawyers decide that it is entirely clear of your patents, and offered us a very tempting royalty and other valuable considerations. Should he know what we now know he would take your casters apart for patterns and in thrty days would fill the market at half the price you get. Had you approached us in an honorable manner we should have had no objection to conveying to you the information it has cost us some money and much time to collect, but you seem to have decided that sheer brute force would answer your purpose, but it will just as certainly break up your monopoly. It hardly seems possible that you cannot comprehend it, but we have given you a sufficient hint. We say to you plainly that all your patents, so far as anything of material value is concerned, are of no account whatever, all of which you can learn by a little patient investigation, such as we have given it. If any part of this is true we fail to see just what you are to gain even if our patents you have so boldly attacked were infringements. If you or your attorney is blest with the most ordinary common sense you must see that our Yale caster cannot possibly be an infringement. We know our stove truck and 1881 caster are not infringements, and we shall continue to make the truck, and you cannot prevent it. We have no occasion to make the caster, but if we desired you could not prevent us from making yours just as you make it. It is sufficient for us that we do not need to make it. We have written our customers

whom you have attempted to blackmail to not pay you one cent, and we will furnish the material to defend them.

We shall not trifle a moment in this matter, for we have too much at stake, and we shall use such weapons as we have, and they will be effective. We shall not uncover our course in regard to the stove truck, but will say that if your attorney has kept up with his patent profession and has made any study of the state of the art that he cannot be ignorant of its worthlessness.

45 If we do not hear from you before Wednesday you will learn of something you might be glad to recall; but we will say that we are willing to confer with you on a business arrangement, mutually beneficial, which it does not become us to suggest, but may occur to you, but which does not leave a question in regard to the validity of our patents, which we will not for a moment consider. Should you think it worth your while you will find us at our office, in New Haven, and we will try and treat you better than you have treated us. We will promise to come no snap game on you; and some things we might show you and some things we might say — be a light to lead you out of destruction. If it should not accomplish this you at least would be no worse off. Should you desire, we will meet you in New York upon receipt of telegram from your home, which we would have forwarded should we be absent.

Yours, etc., YALE CASTER COMPANY AND M. B. SCHENCK.

Defendants' Evidence.

Testimony of Octavius Knight, Esq., taken on behalf of the defendants in the above-entitled cause, pursuant to the annexed notice, before Philip Mauro, notary public in and for the District of Columbia, at the office of Messrs. Knight Bros., No. 633 F St. N. W., Washington, D. C., on Thursday, October 16th, 1884, beginning at 10 o'clock a. m.

Present: C. P. Jacobs, Esq., counsel for complainants, and F. O. McCleary, Esq., counsel for defendants.

OCTAVIUS KNIGHT, being first duly affirmed, testifies as follows:

Q. 1. What is your name, age, residence, and occupation?

Ans. Octavius Knight; 53 years; Washington, D. C.; my occupation is that of a patent attorney and mechanical expert.

Q. 2. Please state what experience you have had tending to qualify you to testify as a mechanical expert in patent cases.

46 Ans. For the past twenty-eight years my whole time and attention has been devoted to the business of preparing and prosecuting applications for letters patent, making investigations in the United States Patent Office and elsewhere in regard to the novelty and patentability of inventions, and critically analyzing and comparing inventions and machinery of various kinds in their relations to existing or proposed patents. I have frequently been called

upon to testify as an expert in patent litigation in the United States courts.

Q. 3. Have you examined United States letters patent No. 190,152, granted to A. C. Martin for improvements in furniture casters May 1st, 1877, and the record of his application in the Patent Office; and, if so, do you understand the invention described and claimed in said patent?

Ans. I have carefully read the said patent, No. 190,152, and have examined the record of the application of said patent, and believe I fully understand the invention therein set forth and particularly pointed out in the claim thereof.

Q. 4. Please explain the invention claimed by Martin, specifying what, in your opinion, the patentee deemed the novel features of his invention as disclosed by his specification and the record of his application in the Patent Office.

Ans. The invention described in the said patent relates to a furniture caster constructed with two floor wheels in connection with devices to ensure the contact of both wheels with the floor, although the latter may be uneven in surface.

From the specification and the record of correspondence under the application it appears that the patentee, at the time of making his application, supposed himself the first inventor of a two-wheel caster in which the axis of the floor wheels could oscillate relatively to the furniture leg to which the caster is applied. It appears, however, from the record that the application was originally rejected on the ground that this invention was not broadly new. After some previous correspondence in the case the Patent Office examiner, under date of 26th October, 1876, criticised the applicant's claims on the ground that he claimed his devices so arranged that the caster may oscillate; "whereas (as stated by the examiner) a dozen inventions might do this and not be equivalents of the applicant's arrangement of devices, to which alone he is entitled." The applicant, in view of the references cited, responded to this letter on the 31st October, 1876, as follows: "The examiner, in his letter of October 26th, states, with truth, a dozen inventions may do this and yet not be equivalents of applicant's arrangement of devices."

Referring to the claim in the Martin patent, I find that the invention therein pointed out, and which is sought to be protected by the patent, is a furniture caster having the quality referred to above, to wit, permitting the floor-wheel caster to oscillate relatively to the leg of the table or other furniture, in which caster all the following features or elements are combined:

First. A pair of floor wheels mounted in a suitable housing.

Second. An anti-friction pivot wheel mounted in said housing and constituting the principal bearing surface between the floor-wheel housing and the plate at the bottom of the furniture
47 leg, on which plate said anti-friction wheel travels in the swivelling movement of the caster.

Third. A collar sustaining the downward pressure at the heel of the housing, or that part most remote from the floor wheels.

Fourth. A convex or "rocker-formed" bearing between the heel of

the housing and the said collar, this convex surface being formed on the heel of the housing itself. It is further specified that the opening in the housing in which the entire caster swivels is elliptical, so as to permit the lateral oscillation of the caster.

Neither of the features specified above, namely, the two floor wheels, the anti-friction pivot wheel, the housing with an elliptical opening, the "rocker-formed collar bearing," and the collar on which the said bearing rests, can be dispensed with without departing from the invention pointed out in the claim of Martin's patent. The collar, which is designated by the letter D in the drawing, is not referred to by letter in the claim, or indeed in the specification, but its existence as an element in the combination pointed out in the claim is necessarily implied and involved by the expression "rocker-formed collar bearing," for the reason that it is only the presence in the invention of this collar which renders that portion referred to in the above claim a "rocker-formed collar bearing."

(Defendant's counsel here offers in evidence a sample two-wheel caster and requests the notary to entitle and mark it "Defendant's Exhibit Yale Caster.")

Q. 5. Please examine the "Exhibit Yale Caster," compare it with Martin's patent, and state in what particulars, if any, it differs from the device described and claimed in said patent.

Ans. The "Defendant's Exhibit Yale Caster" I find to be a two-wheel caster, with two floor wheels and with two anti-friction wheels, located one on each side of the vertical plane of the floor-wheel axis, the attachment of the floor-wheel housing to the furniture plate being through the medium of a pivot pin which turns in the furniture plate and is secured to the floor-wheel housing by the horizontal axis pin of the anti-friction wheels, which axis pin thus becomes the centre of oscillation for the caster. The caster is, furthermore, provided with a hollow stud formed in one piece with the furniture plate and projecting downward therefrom, within which hollow stud the vertical swiveling pin turns.

The "Exhibit Yale Caster" differs materially and essentially from the invention specified in the claim of the Martin patent, in that it lacks entirely the collar at the bottom of the attaching stud by which the caster housing is secured to the furniture leg to prevent it from dropping off in the event of lifting the furniture, and it also lacks the "rocker-formed collar bearing" of the floor-wheel housing, which in the Martin patent rests upon the said collar beneath it and forms one point of the axis of oscillation.

(Defendant's counsel here offers in evidence a number of printed Patent Office copies of United States patents, which he requests the notary to entitle and mark, respectively, as follows:)

48 Defendant's Exhibits—
Bailey Patent, No. 12578, March 20, 1855.
Plimpton Patent, No. 37305, January 6, 1863.
Plimpton Reissued Patent, No. 3906, April 5, 1870.
Plimpton Reissued Patent, No. 4292, March 7, 1871.

Long Patent, No. 38232, April 21, 1863.
Plimpton Patent, No. 55901, June 26, 1866.
Ford, No. 58999, October 23, 1866.
J. T. Barnes, No. 66116, June 25, 1867.
Hodgson, No. 88711, April 6, 1869.
Morris Patent, — 98110, July 27, 1869.
Lemman Patent, No. 103,346, May 24, 1870.
Fenton Patent, No. 122,376, January 2, 1872.
Arnold & Hanschildt Patent, No. 126,433, May 7, 1872.
Ford Patent, No. 132,066, October 8, 1872.
Parry, No. 135,286, January 28, 1873.
Dodge Patent, No. 136,711, March 11, 1873.
Netz Patent, No. 149,782, April 14, 1874.
Buckingham Patent, No. 150,132, April 28, 1874.
Blair Patent, No. 159,492, February 9, 1875.
Saladee Patent, No. 177,567, May 16, 1876.
Gano Patent, No. 188,351, March 13, 1877.
Gibson Patent, No. 189,451, April 10, 1877.
Hoffstaetter, No. 196,017, October 9, 1877.

It is hereby stipulated and agreed for and between counsel that the printed uncertified copies above named will be accepted in evidence and accorded the force of certified copies.

Q. 6. Please compare each of the exhibits above named with the model of the patent, and specify what, if any, features of the Martin device are shown in said exhibit.

Ans. The Bailey patent, No. 12578, shows an oscillating caster, with a single floor wheel. The principal oscillation of this caster is the line of travel of the floor wheel; but there is also a considerable lateral oscillation equivalent to that of the Martin caster, and which will have the effect of causing the floor wheel to find its own bearing on uneven floors. This function, though less important in a one-wheel than in a two-wheel caster, is nevertheless a practical one with a single wheel, as it enables the wheel to be made of considerable breadth and with a flat face, the benefit of which is that it is less liable to form marks or depressions in floors or carpets in rolling over the same. Hence it will appear that the difference in applying the oscillating principle to a two-wheel caster when it has before been applied to a single-wheel caster is a difference in degree rather than in kind.

The Plimpton patent, dated January 6, 1863, and numbered 37305 and reissued twice under numbers 3906 and 4292, shows and describes a roller skate having paired floor wheels adapted to oscillate laterally, as do the floor wheels in the Martin patent, and with the same effect—that is to say, causing the said wheels to have an equal bearing on the floor surface, even though they may be deflected out of parallelism with the sole plate which they support. In the Plimpton skate patent the device for oscillating the paired floor wheels is supplemented by an improvement which
49 determines the planes of rotation of the said floor wheels by the vertical inflection of the sole plate above them, so that

such lateral deflection or inclination of the sole plate may be used to guide the wheels in any desired curves. This supplementary mechanism does not impair or modify the first-named effect of the lateral oscillation of the floor wheels, to wit, causing them to maintain an even bearing on the floor, whether the said floor be smooth and horizontal or otherwise.

The patent of Long, No. 32232, issued April 21, 1863, shows a mower or harvester framed with paired pilot wheels capable of lateral oscillation to adapt them to unevenness in the ground without affecting the vertical position of the parts which they support. This patent also embodies the general principle of paired floor wheels capable of lateral oscillation to adapt them to find an even bearing on uneven surfaces.

The Plimpton patent, No. 59901, dated June 26, 1866, is similar, so far as concerns the principle under discussion, to the earlier patents of the same inventor, above referred to.

The patent of Ford, No. 58999, dated October 23, 1866, shows a furniture caster with a broad wheel having a flat tread and a floor-wheel housing confined to the furniture plate by a screw, the head of which forms a collar similar to that shown and described in the Martin patent in its function of supporting the wheel-housing and preventing it falling away from the plate when the furniture is lifted from the floor. It has also a rigid stud projecting downward from the furniture plate and forming a pivot on which the floor-wheel housing swivels, as in the Martin patent. The broad flat tread of the floor wheel in the Ford patent suggests the advisability of making it capable of lateral deflection so as to find its own bearing on the floor surface, and it is manifest that unless the parts were very tightly fitted such oscillation would necessarily occur, in which case the Ford patent would contain all the equivalents of the device pointed out in the claim of the Martin patent, with the exception of having a single wide floor wheel instead of two narrow wheels.

The Barnes patent, No. 66116, dated June 25, 1867, shows a two-wheel caster, nearly ten years older than that of Martin, with precisely the same effect in preventing pivoting upon the floor wheel in the swiveling movement of the caster. The caster shows the ordinary stem extending upward from the floor-wheel frame into a socket in the furniture leg.

The extent of lateral oscillation afforded to this caster depends entirely upon the fit of the stem within the socket. Inasmuch as the effective operation of the caster does not necessitate a tight fit between such stem and socket, it is apparent that the Barnes patent sets forth all that is necessary to enable a mechanic to make a two-wheel caster with effective lateral oscillation of the floor wheels.

The Hodgson patent, No. 887,111, dated April 16, 1869, is another example of a parlor skate having paired floor wheels with lateral oscillation for the purpose already explained.

The same explanation applies to the patents of Morris, No 93110, July 27, 1869, and Lemman, No. 103,346, May 24, 1870, and Fenton, No. 122,376, January 2, 1872.

The patent of Arnold & Hanschildt, No. 126,433, dated May

7, 1872, shows a furniture caster with a single broad floor wheel and anti-friction wheels interposed between the floor-wheel housing and the furniture plate, said anti-friction wheels being almost directly in the vertical plane of the floor-wheel axis, so that the weight of the furniture is sustained by the anti-friction wheels directly above the floor-wheel axis and the swiveling attachment of the caster is almost completely relieved of vertical strain. These patentees employ paired anti-friction wheels beveled in form and having pintles converging to the vertical swiveling axis of the caster so as to adapt them to rotate freely. The swiveling attachment of the floor-wheel housing to the furniture plate is by means of a socket in the floor-wheel housing fitting over a conical stud on the fixed furniture plate and a nut or washer on the projecting threaded end of the pivot stud. This patent illustrates an early use of anti-friction wheels in the casters, but as two wheels are employed with their axes not in the line the caster is not designed for lateral oscillation of the floor-wheel housing.

The patent of Ford, No. 132,066, dated October 8, 1872, bears the same relations to the Martin patent as the earlier patent, No. 58999, of the same inventor.

The patent of Parry, No. 135,286, dated January 28, 1873, shows a single-wheel caster with an anti-friction wheel located nearly over the horizontal axis of the floor wheel, the furniture plate being formed with a downwardly projecting rim and an anti-friction wheel with a grooved periphery to receive said rim so as to relieve the central pivot from the horizontal strain to which it would otherwise be subjected while the caster is running. This patent illustrates the use of the anti-friction wheel nearly over the horizontal axis of the floor wheels, and unless the parts be very tightly fitted the device would also constitute a caster capable of lateral oscillation, such oscillation being upon the point of contact between the furniture plate and the anti-friction wheel.

The patent of Dodge, No. 136,711, dated March 11, 1873, shows another example of the roller skate with paired floor wheels capable of oscillation.

The patent of Netz, No. 149,782, dated April 14, 1874, shows a furniture caster with a single floor wheel and an anti-friction wheel directly over the horizontal axis of the floor wheel. The floor-wheel housing is made in two parts, each containing one-half of the socket or bearing of the vertical swiveling pivot of the caster and connected together by screws. The swiveling pivot is formed with a head or washer similar to that of the Martin patent for supporting the caster frame when the furniture is lifted from the floor.

The patent of Buckingham, No. 150,132, dated April 28, 1874, shows and describes a caster with two floor wheels adapted for independent rotation, so as to prevent the swiveling upon the floor wheel and the anti-friction wheel in the housing bearing upon the furniture plate at a point about midway between the vertical plane of the floor-wheel axis and the vertical swiveling axis of the caster. This patentee adds two additional anti-friction wheels, one on each side, to support the caster laterally. These run in open bear-

51 ings, and if they should be left out the floor-wheel housing would be capable of lateral oscillation, as described in the Martin patent, unless the vertical socket of the housing were very tightly fitted upon its pintle. It is apparent that a caster of this construction after some little wear would become a caster with a pair of floor wheels adapted for independent rotation, and capable also of lateral oscillation, together with their frames, so as to cause them to take an even bearing on unlevel surfaces and adapt themselves to inequalities in the floor on which they run.

The patent of Blair, No. 159,491, dated February 9, 1875, describes an improvement in fifth wheels for vehicles, with a special provision for adapting the axle of the front wheels to oscillate in a vertical plane without disturbing the vertical position of the superincumbent parts.

The patents of Saladee, No. 177,567, dated May 16, 1876; Gano, No. 188,351, dated March 13, 1877; Gibson, No. 139,451, dated April 10, 1877, show and describe parlor skates with paired floor wheels capable of independent lateral oscillation, as before described.

(Defendants' counsel here offers in evidence a sample two-wheel caster and requests the notary to mark it "Defendants' Exhibit English 1840 Caster.")

(Also a printed copy of the specification and drawing of English patent No. 8749, of December 23, 1840, which the notary is requested to mark "Defendants' Exhibit Mackelcan & Murdock English Patent.")

Q. 7. Please compare the "Exhibit English 1840 Caster" with the drawing of the Exhibit "Mackelcan & Murdoch English Patent" and state whether or not said Exhibit Caster correctly illustrates and corresponds to any of the figures of said drawing and the description thereof; and, if so, state what the said Exhibit Caster shows to have been the practical operation of the device illustrated in the said corresponding figures of the drawing.

Ans. I have carefully compared the "Exhibit English 1840 Caster" with the drawing and specification of the English patent of Mackelcan & Murdoch, No. 8749, O. L., dated December 23, 1840, and find that the said "Exhibit English 1840 Caster" correctly embodies the invention shown in the figures 25, 26, 27, and 28 of the drawings of said Mackelcan & Murdock English patent and agrees precisely with the description of the said figures in the specification of said patent. I find that the figures 25, 26, 27, and 28 of the drawing of said English patent and the Exhibit English 1840 Caster show a furniture caster with a pair of floor wheels mounted in a housing capable of lateral oscillation so as to adapt the said floor wheels to find an equal bearing on an uneven floor and thus adapt themselves to uneven surfaces. Fig. 25 of the drawing of said English patent clearly shows sufficient space between the vertical swiveling stud or pivot of the caster and the housing which is journaled thereon to permit sufficient lateral oscillation of the

floor wheels for this purpose, and such capability of lateral
52 oscillation is correctly illustrated in the "Exhibit English 1840 Caster."

Q. 8. Please compare the "Exhibit English 1840 Caster" with the Martin patent and state what features, if any, of the Martin device are shown in said exhibit.

Ans. I have carefully compared the "Exhibit English 1840 Caster" with the Martin patent and find that the said "Exhibit English 1840 Caster" contains all the following elements of the invention pointed out in the claim of the Martin patent:

First, a pair of floor wheels; second, an anti-friction pivot wheel running in the floor-wheel housing and bearing upward against the furniture plate on which said floor-wheel housing swivels; third, the floor-wheel housing having an opening for the swivel stud or pintle of sufficient size to permit the lateral oscillation of the floor-wheel housing to permit the wheels to adapt themselves to uneven surfaces, and, fourth, a vertical bearing between the floor-wheel housing and the swivel pin or pintle which prevents the housing from dropping out of place in the event of the furniture being lifted. This vertical bearing between the housing and the central swivel pin does not resemble the "rocker-formed collar bearing" of Martin's claim in shape or position, but it has precisely the same function in supporting the heel of the caster frame without interfering with the free lateral oscillation thereof. I further find from a critical inspection of Fig. 25 of the drawing of said English patent and the "Exhibit English 1840 Caster" that this early English invention of Mackelcan & Murdoch embodies and exhibited the precise equivalent of what is termed in the Martin patent the "elliptical housing opening," for the reason that the housing opening or socket in the Mackelcan & Murdoch English patent is of sufficient breadth to permit lateral oscillation, and the adjustment on the horizontal pintle of the anti-friction wheel, the point of which pintle engages with the vertical swiveling pintle on the caster to retain the housing thereon, will contract and limit the effective diameter of the housing opening lengthwise of the caster frames, so as to limit the play in this direction as much as may be desired and cause the base or upper portion of the swiveling stud to hug the surface of the socket near its upper end as closely as may be desired to limit the play between the parts. From the description and specification it is found that these patentees prefer that these parts should not be brought in close contact, but they show a device capable of being applied in this manner at the option of the user, and they particularly specify that the construction of their caster obviates any lateral friction between the parts; from which, also, it is apparent that ample provision is made for the lateral oscillation of the floor-wheel housing. For these reasons I find that the figures referred to in the Mackelcan & Murdoch English patent and the "Exhibit English 1840 Caster" show mechanical equivalents of the elliptical housing opening referred to in the claim of the Martin patent.

Q. 9. Please state whether or not, in your opinion, the "Exhibit Yale Caster" is within the terms of the claim of Martin's patent or

embodies the invention therein specified, in view of the state of the art prior to the date of Martin's patent, as shown by the exhibits of the defendants, giving reasons in full for whatever opinion you may express.

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Ans. In view of the state of the art as revealed in the exhibits referred to in the question, the "Exhibit Yale Caster" is not, in my opinion, within the terms of the claim of the Martin patent, No. 190,152, and does not embody the particular invention pointed out in said claim.

I do find in the "Exhibit Yale Caster" a pair of floor wheels and an anti-friction pivot wheel and a housing with an elliptical opening, but I do not find the said housing constructed substantially as specified and shown in the Martin patent, nor do I find any mechanical equivalent of the "rocker-formed collar bearing" specified in the claim of the Martin patent. From the fact that the English patent of Mackelcan & Murdoch shows a pair of floor wheels with housing adapted to oscillate relatively to the furniture plate and connected therewith so as to be prevented from falling away when the furniture is lifted, it is manifest that the expression "rocker-formed collar bearing" or its mechanical equivalent in the claim of the Martin patent cannot embrace any and all modes of affording vertical support between the floor-wheel housing and the furniture plate while permitting the lateral oscillation of said housing; therefore that the expression "rocker-formed collar bearing or its mechanical equivalent" must necessarily mean and be restricted to such a bearing resting on a collar beneath the floor-wheel housing as shown in the Martin patent.

I further find, from the Arnold & Hanschildt patent and those of Parry, Netz, and Buckingham, that it was not new at the date of Martin's invention to provide a caster with anti-friction wheels between the floor-wheel housing and the furniture plate, and from the said patents of Parry, Netz, and Arnold & Hanschildt that it was not new to locate such anti-friction wheels over or nearly over the floor-wheel axis, and from said patent of Buckingham and the English patent of Mackelcan & Murdoch that it was not new to use anti-friction wheels with a two-wheel caster.

Hence, I find that the use of any of these devices separately does not necessarily constitute a use of the invention embraced in the claim of the Martin patent.

I do not find in the "Exhibit Yale Caster" the invention embraced or pointed out in the claim of the Martin patent, for the reason that I do not find in the said Yale caster a housing of a construction similar to that described and claimed by Martin, nor do I find in the Yale caster any equivalent of the "rocker-formed collar bearing" shown and described in the Martin patent, nor any collar beneath the housing for such collar bearing to rest on.

Q. 10. Have you read the testimony of Chester Bradford, Esq., the complainant's expert in this cause; and, if yes, do you agree with all of his opinions?

Ans. I have carefully read the testimony of Chester Bradford,

Esq., the complainant's expert in this cause, but cannot agree with all the opinions therein expressed.

Q. 11. Specify the points upon which you disagree with Mr. Bradford, giving reasons in full for your opinions.

54 Ans. I disagree with the views expressed by Mr. Bradford in his answer to Q. 13 in the following particulars:

I do not find in the Yale caster a wheel-housing similar to that in the Martin caster, for the reason that the wheel-housing in the Martin caster has an opening from top to bottom, which the vertical swiveling stud of the furniture plate passes completely through, whereas the Yale caster has no such opening, but only a recess or cavity in the top of the housing, which recess or cavity the maker of the Yale caster was enabled to use instead of the housing opening of Martin by adopting a different mode of attaching the housing to the furniture plate. This consists in substituting for the Martin stud and screw and a collar held by the screw beneath the housing a horizontal pin passing completely through the swiveling pintle of the housing, which pintle is thus made to revolve together with the housing, and consequently turns in the fixed furniture plate, the horizontal pintle of the anti-friction wheel being used for the attachment of the floor-wheel housing, as in the Mackelcan & Murdock English patent, and as more particularly shown in the patent of Hoffstaetter, No. 196,017, dated October 9, 1877, which dato I find on the "Exhibit Yale Caster."

I do not find in the wheel-housing of the Yale caster an elliptical opening in the ordinary sense in which this term is used in the Martin patent. There is no opening properly so called in the housing of the Yale caster, but only a cavity or recess in the upper surface of the housing, as already explained. The oscillation of the housing in the Yale caster is not on the bearing of the anti-friction wheels, as stated by Mr. Bradford, but necessarily on the axis of said wheels, the said axis being held in a certain horizontal plane, in which it is carried around by the rotation of the housing. The two casters do not operate in substantially the same way and accomplish the same result in any sense in which the English patent of Mackelcan & Murdoch does, nor likewise operate in the same way and accomplish the same result.

Referring to Q. 14 and Mr. Bradford's answer thereto, I do not find in the Yale caster floor wheels and their housing adapted to revolve in a horizontal plane without the spindle, as it is very plain that such floor wheels and their housing in revolving carry the spindle with them, as in the Hoffstaetter patent, No. 196,017. I do, however, find in the English patent of Mackelcan & Murdoch a caster wherein the floor wheels with their housing are adapted to revolve in a horizontal plane without the spindle. I also find in the Mackelcan & Murdoch English patent mechanism adapted to permit the oscillation of the caster upon the spindle in a vertical plane, as referred to in Q. 16 and Mr. Bradford's answer thereto.

I do not find in the Yale caster any part of the bearing surface of the anti-friction wheel directly over the axis of the floor wheels, as stated by Mr. Bradford in his answer to Q. 17. The fact that the

hub of said anti-friction wheel may extend partly over the floor-wheel axis has manifestly no practical bearing upon the question.

Referring to Mr. Bradford's answer to Q. 19, I find, as he does, that the Yale caster differs in construction from that described in the Martin patent, and as I do not find in the Martin patent any claim to a principle of operation, this difference in construction is the ground of my opinion that the Yale caster does not embody the invention pointed out in the claim of the Martin patent.

Referring to Mr. Bradford's answer to Q. 22, where he says there is no feature of similarity between the Yale caster and that described in the Hoffstaetter patent, I must disagree with this view, for the reason that I find in the Yale caster an embodiment of the invention pointed out in each claim of the Hoffsaetter patent, and hence I find that the said Yale caster is correctly marked "Patented October 9, 1877." Referring particularly to the claims in the Hoffstaetter patent, I find that the first claim embraces the combination, in a caster, of a center pin having a head with a cap plate, a roller frame, and transverse bolt passing through the said center pin. The Yale caster contains each of these devices and embodies the combination set forth in the claim precisely and completely. This fact is in no manner changed by the other fact that two floor wheels instead of one are used, the use of two floor wheels having been a public right in the United States for more than forty years, as shown by the publication of the Mackelcan & Murdock English patent. I further find that the second claim in the Hoffstaetter patent embraces the combination of an anti-friction wheel with transverse bolt, on which said wheel is journaled, the roller frame, the cap plate or furniture plate, and the center pin which attaches the roller frame to the cap plate or furniture plate. All these devices are clearly embodied in the Yale caster, and hence I find that the said Yale caster embodies precisely and completely the combination pointed out in the second claim of the Hoffstaetter patent.

The features possessed in common by the Martin caster and the Yale caster, as referred to by Mr. Bradford in his answer to Q. 34, relating mainly to principles of operation, are likewise embraced in Defendants' Exhibit English 1840 Caster and shown and described in the English patent of Mackelcan & Murdock.

The "rocker-formed collar bearing," which is made an essential feature in the Martin claim, does not exist in the Yale caster. This fact alone would be sufficient to confirm me in the opinion originally expressed—that the Yale caster does not embody the invention pointed out in the claim of the Martin patent.

Referring to Mr. Bradford's answer to Q. 65, I must differ from his view, that the making of the opening in the housing round would destroy its function of receiving the drawing movement from the spindle, as it is manifest that the weight of the furniture resting on the wheel-housing through the anti-friction wheel combined with the frictional resistance in drawing the caster over the floor will tend to keep the heel of the wheel-housing in contact with the collar beneath it when the anti-friction wheel is directly over the axis of the

floor wheel, as described in the Martin patent, and, further than this, considerable freedom of movement between the wheel-housing and the swiveling stud longitudinally of the housing would not be fatal to the operation of the caster, while a slight oscillating movement in a lateral direction is quite sufficient to enable the wheels to
56 accommodate themselves to any possible irregularities of floors on which casters are intended to be used.

I also differ from the view expressed by Mr. Bradford in his answer to Q. 67, for the reason that it is manifest that the extending of the spindle of the anti-friction wheels completely through the attaching stud compels the said stud to revolve with the wheel-housing and involves a construction of wheel-housing and attaching stud radically different from that of Martin. With the construction employed in the Yale caster, where the wheel-housing is connected to the furniture plate by a vertical rotating stud and a horizontal pin passing through the wheel-housing and through the said vertical stud, it would be impossible to use Martin's "collar bearing" and the fixed collar beneath, which is indispensable for it to rest on.

Adjourned at 5.30 p. m., to meet Friday, October 17, 1884, at 12.30 p. m.

FRIDAY, *October* 17, 1884.

Met at 12.30 p. m., pursuant to adjournment.

Present: C. P. Jacobs, Esq., counsel for complainants, and F. O. McCleary, Esq., counsel for defendants.

Cross-examination by C. P. JACOBS, Esq., counsel for complainants:

X Q. 12. Are you acquainted with any defendants to this suit?

Ans. Not to my knowledge.

X Q. 13. Have you ever had any communication with them about the matter of this action?

(Objected to by counsel for defendants as immaterial and not proper cross-examination.)

Ans. I have not.

X Q. 14. By whom are you retained or employed as expert witness in this action?

(Same objection.)

Ans. By the Yale Caster Co., of New Haven, Conn.

X Q. 15. Are you acquainted with M. B. Schenck, formerly of Fulton, N. Y.?

Ans. I am.

X Q. 16. How long have you known him?

(Same objection.)

Ans. A number of years; I cannot say how long without reference to my correspondence.

X Q. 17. Are you a member of the firm of Knight Bros., who prosecuted the application of M. B. Schenck for an application for

letters patent for an improvement in furniture casters, filed October 22, 1881, for which letters patent No. 251,290 were issued on the 29th day of November, 1881?

(Same objection.)

Ans. I am.

X Q. 18. Were you personally concerned in the prosecution of the application?

(Same objection.)

Ans. I was.

X Q. 19. Are you aware that the first and broadest claim in that application was rejected on letters patent issued to Alexander C. Martin, complainant in this suit?

57 Ans. I cannot now recall the references cited in the case from memory.

X Q. 20. You have no recollection as to that matter, then?

Ans. No certain recollection.

X Q. 21. What is your impression?

Ans. I really have no certain impression about it. I remember to have become advised of the existence of the Martin patent years ago, but have no impression from my memory as to whether it was cited in connection with that application of Schenck or not.

X Q. 22. Were you personally concerned and employed as attorney in prosecuting the application of the same M. B. Schenck for letters patent for improvements in furniture casters, filed September 30, 1882, and issued July 8, 1884, under No. 301,835?

Ans. I was.

X Q. 23. Do you remember that in that case a majority of the claims first filed were rejected by the examiner, who stated that the use of one or more anti-friction wheels did not constitute invention?

Ans. I do not remember a majority of the claims being rejected. I do remember the examiner making the objection last named.

X Q. 24. Do you remember that after that first objection you made an amendment in the case in which you changed the word "housing" to "track plate" in some of the claims?

(Counsel for defendants objects to last Q., as well as to Nos. 19, 20, 21, 22, and 23, for the reason that a certified copy of the Patent Office record of the application referred to is the best evidence as to office actions; also as not proper cross-ex.)

Ans. I cannot remember as to this. The application was principally prosecuted by one of my assistants.

X Q. 25. Do you remember that on the 13th of January, 1883, your amendment was again rejected, and it was stated that the only substantially patentable feature in your invention then was the "long journal?"

(Same objection.)

Ans. I do not.

X Q. 26. Do you remember that on the 19th of March you made

another amendment of that case and submitted an argument in which you insisted that the second friction wheel was a bearing for oscillation, and not merely an anti-friction wheel?

(Same objection.)

Ans. I have an impression that such argument was made, but I cannot affirm to it from memory.

X Q. 27. Was the agent or officer of the Yale Caster Co. who acted on behalf of that company in retaining you in this case Martin B. Schenck?

(Objected to as immaterial by counsel for def'ts.)

Ans. It was.

58 X Q. 28. And he is the secretary of that company, is he not?

Ans. That is my recollection.

X Q. 29. Referring to the "Defendants' Exhibit Mackelcan & Murdock Patent," I will ask you to state whether you find in the descriptive part of the specification of this exhibit any statement whatever of a caster so constructed that the spindle or cap plate fixed to the furniture will oscillate in a vertical plane while the wheels and axle will revolve in a horizontal plane. If so, refer to the page and line.

Ans. I find this indirectly and inferentially stated on page 6, lines 21 to 26, where it states that "the lateral surfaces in motion do not touch each other."

X Q. 30. Is that all the reference you find to it in the specification or claims of the Mackelcan & Murdock patent?

Ans. I find general reference to rendering the caster more easy in movement and better adapted to ride over uneven surfaces.

X Q. 31. By reason of what?

Ans. By reason of having two floor wheels, and also by making the wheels of large size.

X Q. 32. That is the only reason given, is it not, in that specification why they will ride over uneven surfaces more easily?

Ans. That is the only one that I remember.

X Q. 33. Do you find in that specification any advantage claimed for the action of the axis of the floor wheels, or rather the housing, having a compound motion with reference to the central pivot, so that when the floor wheels meet obstructions upon the floor surface the motion is taken up by the play of the parts and does not travel to the leg of the furniture to which the caster is attached?

Ans. I do not find this language in the specification, but it is a necessary result of the construction shown and described.

X Q. 34. Do you know whether the drawings attached to that exhibit are drawn to a scale?

Ans. I do not find it stated, but they have that appearance.

X Q. 35. Is there anything in the descriptive part of the specification of Mackelcan & Murdoch which indicates how the draughtsman is to be governed in determining the proportional sizes of parts and openings in making the drawings?

Ans. Yes. The specification states that the fixed vertical pintle on which the caster swivels must not have lateral contact with the socket which works around it in the ordinary operation of the caster.

X Q. 36. Does the specification indicate anywhere that that looseness of fit need or ought to be any more than to allow the caster to revolve about the spindle? If so, point it out by page and line.

Ans. It does very clearly on page 6, lines 25 and 26, where it says, "These parts do not come in contact," whereas it is the custom to have such parts in contact where swiveling is the only object sought.

X Q. 37. And that is the only thing that is stated in the specification, is it not?

Ans. That is the only thing I now remember.

59 X Q. 38. Did you ever see the Mackelcan & Murdock caster in the market or elsewhere?

Ans. None except this exhibit in the case.

X Q. 39. Except this model?

Ans. Except this model.

X Q. 40. What was the first two-wheel furniture caster you ever saw in which the compound motion referred to in the Martin patent was used, namely, the oscillation of the spindle in a vertical plane and the revolution of the floor-wheel axle in a horizontal plane?

Ans. The Schenck caster was the first caster having these characteristics that I ever saw in actual existence.

X Q. 41. And that Schenck caster, as I understand you, is the one upon which his first letters patent were issued which your firm prosecuted?

Ans. My recollection is that in the first Schenck patent the vertical pintle does not oscillate in a vertical plane relatively to the floor wheels, but the furniture plate, of course, does.

X Q. 42. That is to say, the furniture plate with its loosely attached spindle oscillates in a vertical plane. Is that what you mean?

Ans. Yes.

X Q. 43. The same motions are found in the last Schenck patent of July, 1884, are they not, as in the first Schenck patent?

Ans. The same motion of the furniture plate relatively to the floor wheels.

X Q. 44. And there is the same revolution of floor wheels and axle in a horizontal plane in both, is there not?

Ans. Certainly.

X Q. 45. And the object is the same in both—to take up the motion or play in case the floor wheels meet any obstruction without communicating the same to the leg of the furniture, is it not?

Ans. No; I could not say that this is the effect. In meeting an obstruction or protuberance on the floor if either wheel rides over it some vertical motion must be communicated to the furniture leg, but not so much as with a single wheel riding over the same obstruction.

X Q. 46. Referring to Exhibit "Defendant's Mackelcan & Murdock Model," introduced in evidence, as I understand, you say that

this is an accurate model of Figs. 25, 26, 27, and 28. Is that correct?

Ans. It is.

X Q. 47. Who made this model?

Ans. I do not know.

X Q. 48. From whom did you receive it?

Ans. It came to me by express. I cannot tell whether from Mr. Burchenal or from the Yale Caster Co. They both told me that one would be sent.

X Q. 49. Do you know when it was made or where?

Ans. I do not.

X Q. 50. Do you find in the figures referred to in the Mackelcan & Murdoch any such devices for fastening the wheels upon the axle as shown in this model, or do you suppose it is understood?

60 A. I suppose it is applied.

X Q. 51. You find it in that respect an accurate model?

Ans. The specification says that the wheels run freely on the axle; therefore I think it is in all essential respects an accurate model.

X Q. 52. Yet there is nothing in the drawing showing that they are fastened with screws, as shown in this model?

Ans. No.

X Q. 53. Do you say, not knowing whether the Mackelcan & Murdoch drawings are drawn to a scale, that the looseness of fit or play of the spindle in its socket in this model is not greater than that shown in Fig. 25 of the Mackelcan & Murdoch drawing?

Ans. By careful measurement it appears to me that the play between the parts in the model is not greater, in the slightest degree, than indicated in the drawing.

X Q. 54. Is there any advantage, in your opinion, in locating the front friction wheel in a line directly over the axle of the floor wheels?

Ans. I think there is with the construction of housing employed by Martin, referring especially to his mode of supporting the wheel housing and connecting it to the furniture plate; but there would not be, in my opinion, in the construction found in the Yale caster in evidence or the Mackelcan & Murdoch English caster.

X Q. 55. Is there any housing at all in the English caster?

Ans. I would not describe it as a housing, but there is a wheel frame that answers the same purpose as bearings for the floor wheel axis and the anti-friction wheel.

X Q. 56. Do you mean by the frame that central block between the wheels in the model?

Ans. I do.

X Q. 57. Then, in your opinion, that central block in the Mackelcan & Murdoch model is fully as advantageous as the housing shown in the Yale caster?

Ans. Certainly not, in all respects.

X Q. 58. Well, why not?

Ans. Because it does not afford bearings for the floor-wheel axis outside the wheels.

X Q. 59. In the Mackelcan & Murdoch caster where is the load

carried? Where does the weight come in use, upon the front anti-friction wheel or upon the spindle?

Ans. It is divided between the two.

61 X Q. 60. Is it not true that by slightly tightening the screw in the step at the bottom of the socket all lateral motion of the furniture plate is prevented?

Ans. I find the tightening does not prevent lateral motion, but does prevent the proper swiveling of the caster. This is caused by the binding of the vertical stud or pintle against the horizontal screw which retains it within the socket. Of course, it is a difficulty which could not exist in the proper use of the caster.

X Q. 61. By the horizontal screw do you mean the screw that passes through the friction wheel into the annular groove in the spindle?

Ans. I do.

X Q. 62. Then when that binds, either by the tightening of that screw or the one in the step, action on the part of the furniture plate is prevented, is it not?

Ans. I do not think it is so constructed that the tightening of the horizontal screw can bind them together if the step is in proper position. The step is made vertically adjustable evidently for the purpose of taking up wear, and there is no occasion for its being screwed in so as to bind.

X Q. 63. Do you find any such disadvantages, either in the Yale or Martin caster?

Ans. I do not find any such disadvantages in either the Yale or Martin or Mackelcan & Murdoch caster.

(Objected to by counsel for complainants, the latter part of the answer not being responsive to the question.)

(Question repeated.)

Ans. I deny that it is a disadvantage.

X Q. 64. Do you find any such construction in either the Yale or Martin caster, then?

Ans. I find a very similar construction in the Martin caster, but not in the Yale. The Martin caster has a vertical screw in the same position as the Mackelcan and Murdoch, which screw might, under some conditions of fitting, be turned up so tightly as to lock the caster and prevent its swiveling; but I do not consider this a disadvantage in either of the casters, because there is no occasion to so use it and no such intention.

X Q. 65. Referring now to the American patents which have been given in evidence, I will ask if you find in any of them, prior to the Martin, a furniture caster having paired floor wheels with an anti-friction wheel vertically in line over the axle of the floor wheels, and so attached by suitable mechanism to a piece of furniture that the caster is permitted to accomplish the compound motion of oscillating in a vertical plane and of revolution in a horizontal plane. If so, what one?

Ans. I find all these conditions provided for in the Buckingham caster, patent No. 150,132, inasmuch as the caster will have the

same rocking motion if the lateral anti-friction wheels should be removed from their open bearings, which is certainly in the power and knowledge of an intelligent person using the castor.

X Q. 66. Do you find any reference in the description of the Buckingham patent that any vertical oscillation of the spindle or of the furniture plate is intended or that — is regarded as advanta-
62 geous, or any claim therefor?

Ans. I do not.

X Q. 67. Referring now to Exhibit Yale Caster given in evidence, do you find in this exhibit a pair of floor wheels mounted upon a common axle, with a housing about the wheels?

Ans. I do.

X Q. 68. Do you find further in this exhibit an anti-friction wheel mounted between the floor wheels and in a line vertically over the axle of the floor wheels?

Ans. I do not. It is the manifest intention in this caster to bring the bearing between the furniture plate and the anti-friction wheel effectively outside and beyond the vertical plane of the floor-wheel axis.

X Q. 69. Do you not find that the projection of the anti-friction wheel forward of the axle of the floor wheels is much less in the Yale caster than in the Mackelcan & Murdock model?

Ans. I do. It is merely a question of degree and option.

X Q. 70. Do I understand you that it makes no difference, then, as to whether the weight is carried much forward of the axis of the floor wheels, as in the Mackelcan & Murdock model, or near to it, as in the Yale caster?

Ans. It makes no material difference in the Yale caster, where two anti-friction wheels are used; but it would be an advantage, as to easy movement in the Mackelcan & Murdock patent, to have the anti-friction wheel thrown nearer to the vertical plane of the floor-wheel axis, though it may be questioned whether this advantage would not be overbalanced by disadvantages.

X Q. 71. I will ask you if this larger specimen of Yale caster, not an exhibit, which I take from your table, with the label "Yale caster" attached to it—whether in that caster the friction wheel which is between the floor wheels is not directly over the axle of the floor wheel?

Ans. Its bearing surface is not.

X Q. 72. But the wheel is?

Ans. No; not the wheel proper.

X Q. 73. The hub of the wheel, then, is?

Ans. The extremity of the wheel hub reaches about to the vertical plane of the floor-wheel axis; but this, of course, has no bearing upon the question, as the furniture plate has no bearing on this part of the wheel.

(Defendants' counsel objects to Q. 71, 72, and 73 for the reason that the caster referred to has not been introduced in evidence, and is therefore no part of this case.)

X Q. 74. I will ask you if in the Yale caster introduced in evi-

dence the projection back of the anti-friction wheel does not lie directly over the axis of the floor wheels?

Ans. It does, just about. In fact, the two Yale casters referred to in the preceding questions are similar in this respect.

X Q. 75. They are substantially the same, I understand?

Ans. They are, substantially.

X Q. 76. Do you not find in this Yale caster an elliptical opening, corresponding to the housing opening in the Martin caster,
63 in which the stem attached to the furniture plate is permitted to oscillate laterally?

Ans. I find an elliptical cavity in the top of the housing or frame in which the stem is permitted to oscillate laterally.

X Q. 77. Is there any functional difference between that opening in the Yale caster and the one described in the Martin? Are they not for the same purpose?

Ans. There is an important functional difference, in that the opening in the Martin caster is made to permit the insertion of the stem completely through it for the reception of a bearing collar underneath the frame.

X Q. 78. The same result is accomplished in both mechanisms, is it not, namely, the allowing of the spindle to oscillate in a vertical plane in that opening?

Ans. This result is accomplished in both mechanisms; other results are not.

Redirect:

You have already testified that Martin originally filed a broad claim, covering in substance a two-wheel caster and means for imparting compound (an oscillatory and a revolving) motion to the wheel-housing carrying the wheels, which broad claim was cancelled, the more specific claim given in the patent being substituted therefor. Referring now to the said broad claim and also to the English patent of Mackelcan & Murdock, are you of the opinion, from the drawing and description of said Mackelcan & Murdock patent, that the latter embodies in substance said broad claim?

(Objected to by counsel for complainants as irrelevant and incompetent, as the file wrapper and contents must speak for themselves, and it is not competent to tell whether it does or not, but the subject must be determined by the courts by comparison of the file wrapper and contents of Martin with the Mackelcan & Murdock patent and is not within the province of an expert.)

(Counsel for defendants responds that the witness has already testified with reference to the point named in the question, and it is entirely competent for him to specifically set out the ground of his opinion.)

(Counsel for complainants responds that the matter was introduced in his absence, with the understanding that objection should be reserved for him, and he now objects to any such evidence if it is in the record, and objects for the reason that it is not competent as redirect matter, no inquiry having been made in the cross-ex. concerning it.)

64 (Counsel for defendants refers to the examination of the complainants' counsel upon the Mackelcan & Murdock patent as the basis for this redirect question.)

Ans. I cannot say from recollection that the broad claim referred to in the question was that originally presented by Martin, but I do remember that he made such a claim in the prosecution of his application, and that such a claim was rejected and cancelled, and I do find that the invention pointed out in the claim which was cancelled by Martin or his attorney, as referred to in the question, is practically and substantially embodied in the Mackelcan & Murdock English 1840 caster in evidence, and shown and described in the English patent of Mackelcan & Murdock referred to.

(Counsel for complainants objects for the reason that the question is leading.)

(Defendant's counsel gives notice that he will procure and offer in evidence a certified copy of the file wrapper and contents of the Martin patent, No. 190,152.)

(Complainants' counsel objects to so much of Q. 4 and the Ans. thereto as require the witness, or as the witness undertakes, to describe what is contained in the papers composing Martin's application for letters patent as incompetent and irrelevant.)

(Complainants' counsel also objects to the introduction of the model entitled "Defendants' Exhibit 1840 Caster" on the ground that it is so constructed as to allow the oscillation of the spindle within its socket in a manner neither described nor suggested nor claimed in said Mackelcan & Murdock patent.)

(Complainants' counsel further objects to Q. 8 and the answer thereto, because the same are based upon reference made to an incompetent model of the English caster.)

(By consent of counsel for both parties complainants' objections to any part of the direct testimony-in-chief of Mr. Knight are put in at the end of his testimony instead of in their proper places under the questions and answers referred to in order to save recopying.)

(Signed) OCTAVIUS KNIGHT.

DISTRICT OF COLUMBIA, *ss:*

This is to certify that the foregoing deposition of Octavius Knight was taken before me, Philip Mauro, a notary public in and for the District aforesaid, at the office of Messrs. Knight Brothers, No. 633 F street, Washington, D. C., on the 16th and 17th days of
65 October, 1884; that the complainant was represented during the examination of said witness by C. P. Jacobs, Esq., and the defendants by F. O. McCleary, Esq.; that said witness was duly cautioned and affirmed by me previous to his examination; that his said deposition was then and there reduced to writing by A. E. Trumbull, with consent of counsel for the respective parties; that at the conclusion of his deposition the same was subscribed by said witness and affirmed to, and that I am not of counsel or attorney for either side, not directly or indirectly interested in the said cause, and not related to any of the parties thereto.

Witness my hand and notarial seal this twenty-third day of October, 1884.

PHILIP MAURO,
Notary Public.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the files of this office of the file wrapper and contents in the matter of the letters patent granted Alexander C. Martin May 1st, 1877, number 190,152, for improvement in furniture casters.

In testimony whereof I, Benj. Butterworth, Commissioner of Patents, have caused the seal of the Patent Office to be affixed this 20th day of November, in the year of our Lord one thousand eight hundred and eighty-four, and of the Independence of the United States the one hundred and ninth.

[L. S.]

BENJ. BUTTERWORTH,
Commissioner.

HAMILTON, OHIO, *Sept.* 14, 1876.

Hon. Commissioner of Patents.

SIR: I have the honor to transmit herewith P. O. for $15.00 and papers pertaining to ap. for letters pat., caster, Martin. The drawing is sent by same mail; the model by express to-day.

Requesting action, I am, very respectfully, &c.,

J. W. SEE.

To the Commissioner of Patents:

Your petitioner, a resident of Hamilton, Butler county,
66 Ohio, prays that letters patent be granted to him for the invention set forth in the annexed specification.

ALEXANDER C. MARTIN.

(Endorsement:)

3,555 Case "B," as B of applic.

143

Attorney's letter,
April 16, 1876.

Patent Office, Sept. 16, 1876, U. S. A.
Patented file.

1876.

No. 190,152. (B.)

Alexander C. Martin, of Hamilton, county of Butler, State of Ohio.

Furniture Caster.

Rec'd Sept. 16, 1876.
Petition, " " "

Affidavit, Sept. 16, 1876.
Specification, " " "
Drawing, " " "
Model, " 19, "
Cert. dep. —.
1 Cash, $15, Sept. 16, 1876.
Add'l fee cert., —.
" " cash, $20, Apr. 19, 1877.
Examined Nov. 22, '76. A. G. Wilkinson.
2 Issue, Nov. 23, '76. M. D. Peck.
Patented May 1st, 1877.
3 Circular, Nov. 24, 1876.

JAMES W. SEE,
Hamilton,
Butler Co., Ohio.

1876.

Contents.

Application—two papers.
1. Power of attorney, Sept. 16, 1876.
2. September 27, 1876, "1st rejection."
3. Applicant's letter, Oct. 3d, 1876.
4. Amendment, Oct. 3d, 1876.
5. Rejected Oct. 5, 1876.
6. Amendment, Oct. 14, 1876.
7. Letter, Oct. 19th, 1876.
8. Sub. spe'n, Oct. 25, 1876.
9. Letter, Oct. 26, 1876.
10. Amendment, November 2d, 1876.
11. Attorney's letter, Nov. 2d, 1876.
67 12. Letter, Nov. 15th, 1876.
13. Attorney's letter, Nov. 20, 1876.
14. Amendment, Nov. 20, 1876.
Title: Improvement in furniture caster.
Ex'd: C. F., E. L. L.

To the Commissioner of Patents:

Your petitioner, a resident of Hamilton, Butler county, Ohio, prays that letters patent be granted to him for the invention set forth in the annexed specification.

ALEXANDER C. MARTIN.

Specification describing an improved caster invented by Alexander C. Martin, of Hamilton, Butler county, Ohio, relates—

Canceled. See int. spec., Oct. 20, 1876.

This invention — to that class of swiveling casters which are to be placed below pieces of furniture or other heavy articles for the purpose of rendering them more conveniently movable.

The object of this invention is to secure in such casters—
Ease of swiveling motion,
Freedom from pivotal wear of carpet or floor, and
Disposition of material in the line of strain.

In the accompanying drawing Fig. 1 is a perspective view of my improved caster, and Fig. 2 is a vertical section of the same.

A is a flange which attaches to the furniture or other article. From this flange depends the boss C. On the upper surface of the flange is a ring or cup to receive a leg or other projecting portion of the furniture. The screw G, passing through the boss and flange into the furniture, holds the flange firmly to the furniture. The cup upon the upper side of the flange is not essential. The upper portion of the flange may be made in any form most suitable for connecting with the furniture. The attachment is made by means of a single screw, G, which is also utilized for other purposes, as will be hereafter described.

The housing B swivels upon the stationary parts of the caster. It is held in connection with them by the flange on the button D. The button D is held in position at the end of the boss C by the same screw which holds the stationary parts to the furniture. As shown in the drawing, the button D serves not only as a washer for the screw G, but also as a bearing of rotation for the housing.

If desired, the button D might be confined to its duty as a washer; that part of its body which serves as a bearing would then need be a continuation and portion of the boss C. The housing B supports the axles for the floor wheels E and the anti-friction wheel F. The periphery of the anti-friction wheel F bears upon the under sides of the flange A, which forms its path or track. The anti-friction wheel very much reduces the friction and renders the swiveling motion comparatively easy.

68 In the common form of caster a single wheel bears upon the floor.

In swiveling the caster the single wheel becomes a pivot, and its point of pivot motion is its point of contact with the floor. Such casters in swiveling pucker carpets and wear either carpet or floor. My improved caster has two floor wheels, E E. In swiveling the caster these wheels turn in opposite directions. Rolling friction takes the place of rubbing pivoting friction.

If, owing to irregularities in floor surface or to the thrust given the furniture, only one of these two wheels bears upon the floor the caster becomes, in method of action, identical with the common form of one-wheeled caster. No part of the novelty of my invention consists in adding a floor wheel to the common caster. Two-wheeled casters are old. My improvement renders two wheels efficient; insures the equal contact of both with the floor, regardless of ordinary unevenness of floor surface or side pressure applied to the furniture.

Erase and insert C. Amendment, Oct. 14, 1876.

The housing B fits somewhat loosely upon the button D. This looseness allows the housing to oscillate sufficiently to secure contact of both rollers. The axis of oscillation is below the flange A.

Were this point placed too far up the parts would cant, but in doing so the tendency would be to throw all strain on one wheel, relieve the other, and, in short, make a one-wheeled caster of the device. With the axis of oscillation placed below the axis of the anti-friction wheel F, it is found that the direction of travel of load can be changed to one at right angles with itself without any apparent pucker or wear of supporting fabric.

The lineal centers of the two axles on which turn the anti-friction wheel F and the floor-wheel E E are in about the same vertical line. All downward pressure resulting from weight of furniture is met by direct support of material. The pivot of the caster acts as a pivot and draft pin only, being subjected to no strain by the weight of furniture.

I claim as my invention—

First. The housing B, in combination with the anti-friction wheel F, and two or more floor wheels, E, substantially as described.

Second. The combination of the housing B, flange A, and boss C, so arranged that the axis of rotation and oscillation of the housings shall intersect below the flange A, substantially as and for the purpose specified.

Third. The combination of the flange A, boss C, and screw G, substantially as and for the purpose specified.

ALEXANDER C. MARTIN.

Witnesses:

A. MEYERS.
MARTIN A. EISELE.

69 STATE OF OHIO, } ss:
County of Butler, }

Alexander C. Martin, the above-named petitioner, being duly sworn, deposes and says that he verily believes himself to be the original and first inventor of the improvements in casters described and claimed in the foregoing specification; that he does not know and does not believe that the same was ever before known or used, and that he is a citizen and resident of Hamilton, Butler county, Ohio, United States.

ALEXANDER C. MARTIN.

Sworn to and subscribed before me this 25th day of May, 1876.

JOHN M. DAVIDSON,
[L. S.] *Notary Public, Butler Co., Ohio.*

To the Commissioner of Patents:

In the matter of my application for letters patent for improvement in casters, I hereby appoint James W. See, of Hamilton, Butler county, Ohio, my attorney, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business with the Patent Office connected therewith.

ALEXANDER C. MARTIN.

Hamilton, Butler Co., Ohio, September 14, 1876.

(Copy.)

$15, P. O. HAMILTON, OHIO, *Sept.* 14, 1876.

Hon. Commissioner of Patents.

SIR: I have the honor to transmit herewith P. O. for $15.00 and papers pertaining to application for letters pat., caster, Martin. The drawing is sent by same mail; the model by express to-day.

Respecting [requesting] action, I am, very respectfully, &c.,

J. W. SEE.

Room 153.

DEPARTMENT OF THE INTERIOR,
U. S. PATENT OFFICE,
WASHINGTON, D. C., *Sept.* 27, 1876.

Alexander C. Martin, care of James W. See, attorney, Hamilton, Butler Co., Ohio.

Furniture caster. Application filed Sept. 16th, inst.

70 In the matter above referred to it is found that the invention claimed lacks apparently any element of patentable novelty. See, for state of the art and as full substantial equivalents of all that applicant either claims or shows, patents No. 58999, Frederick G. Ford, Oct. 23, 1866; No. 66116, James T. Barnes (two "floor wheels"), June 25, 1867; No. 149,782, F. O. Netz, April 14, 1877, and No. 126,433, A. C. Arnold and O. G. Hanschildt, May 7, 1872.

In view of these "references" and in the absence, as far as is perceived, of any new formation or showing of patentable improvement over them, the present application (three claims) must stand rejected.

A. G. WILKINSON, *Examiner*,
By JAMES LUPTON, 2*d Ass't.*

Drawings No. —.
Class 16, b'ders' h'dw're.
Subject, casters.

HAMILTON, OHIO, *Sept.* 30, 1876.

Hon. Commissioner of Patents.

SIR: I beg to acknowledge the receipt of your communication of Sept. 27, accompanied by decision of examiner, room 153, in the matter of Martin's ap. for letters pat. for caster. I beg to enclose amendment of claims.

Yours very respectfully, J. W. SEE,
Martin's Attorney.

Amended claim; A. C. Martin; furniture casters.

Cancel the three claims presented and substitute—

Amd't, Oct. 14, 1876—A.

In a furniture caster, the combination of the above-described housing B with the anti-friction wheel F and floor wheels E E, when the anti-friction wheel F is situated above and centrally between the floor wheels E E, substantially as and for the purpose specified.

ALEXANDER C. MARTIN,
By JAMES W. SEE, *His Attorney.*

Hamilton, Ohio, Sept. 30, 1876.

Room 153.

DEPARTMENT OF THE INTERIOR,
U. S. PATENT OFFICE,
"Case B." WASHINGTON, D. C., *October* 5, 1876.

Alexander C. Martin, care of James W. See, att'y, Hamilton, Butler county, Ohio.

71 Application for letters patent for furniture casters. Filed September 16, 1876.

To double the number of wheels in Arnold and Hanschildt, just as Barns and many others do, is not patentable.

It would not, of course, be possible to repatent all our devices used with a single wheel to every one who should put in two wheels instead of one.

A. G. WILKINSON, *Examiner.*

Room 153.

HAMILTON, OHIO, *Oct.* 12, 1876.

In the matter of Martin's application for letters patent for casters, filed Sept. 16, 1876—

The following alterations and substitutions are requested in the papers:

The drawing:

Cancel the drawing originally furnished and substitute the one herewith transmitted. } Incorporated.

The specification:

In the 2d p., beginning "The object of this invention," cancel the words "convenience of attachment."

In the 3d p., beginning "In the accompanying drawing," cancel that portion beginning with "In the accompanying" and ending with "vertical section of the same," and substitute the following:

In the accompanying drawing Fig. 1 is an elevation of my improved caster, a portion being shown in vertical section. Fig. 2 is a side elevation, and Fig. 3 is a part elevation exhibiting the part cut away in Fig. 1. } B.

In the p. beginning "In the common form of caster, a single wheel" cancel that portion beginning "the housing B fits somewhat loosely upon" and ending "without apparent pucker or wear of supporting fabric," and substitute the following:

The housing B surrounds the body of the button D. It fits somewhat loosely, and parallel with the axis of the floor wheels it fits very loosely, the hole being slightly elliptical. The downward bearing of the housing upon the collar of the button D is confined to a point opposite to and furtherest from the anti-friction wheel F, effected by cutting away and relieving other portions which would naturally bear upon the collar in such a manner as to develop a curve whose lowest convex portion shall constitute the point of contact with the collar. This is shown very clearly in Fig. 3. The result of the clearance is that the axis of the floor wheels may be inclined or placed at a slight angle to the flange A, which inclination will allow both floor wheels to bear equally upon the floor. The axis of this oscillation is coincident with the axis of the anti-friction wheel F. When furniture is being moved the point mentioned and the upper surface of
72 the wheel F are the points on which oscillation takes place, and, owing to their curved form, the motion is a rolling one of marked sensitiveness. } C.

Claim as amended:

Cancel the words "the combination of the housing B" and substitute: "In a furniture caster, the combination of the above-described housing B with the."

ALEXANDER C. MARTIN,
By JAMES W. SEE,
His Attorney.

Room 153.

In the matter of Martin's caster I beg to submit—

That common one-wheeled casters possess manifest faults.

In swiveling it pivots on the floor.

Pivoting on a carpeted floor puckers and wears it. The pivoting motion is sluggish.

Barnes adds a second floor wheel, seeking to take the pivot point from the floor.

But Barnes makes no allowance for inequality of floor. His two-wheeled caster is often a one-wheeled caster.

His device needs improving.

Arnold & Hanschildt use an anti-friction wheel to increase swiveling freedom—and [an] invented and patented economical means of manufacture.

Assume that they invented the anti-friction wheel caster, then—

Barnes invented a caster which would have no pivoted point upon the floor if the floor would bear upon the two wheels uniformly, and

An uneven floor will not fit the two wheels uniformly, and

Barnes' castor has a pivoted point on a common or uneven floor.

Arnold & Hanschildt invented a caster which would swivel freely, but

Would pivot on the floor.

Martin entirely suppresses the pivotal point of floor contact,

Absorbs and acknowledges the invention of Barnes, and

Makes it efficient by the introduction of a horizontal axis of vibration at right angles to and above the axis of the floor wheels.

Martin secures free swivel motion by absorbing the anti-friction wheel of A. & H. (*s*). He gives his wheel a new function, and to adapt it to its new function he places it in a novel position.

He provides for horizontal vibration and removes interfering matter.

Martin has—

1st. Added a function to an element of the invention of A. & H. for a purpose.

2d. Made the two wheels of Barnes two wheels in practical fact for a purpose.

3d. Given the three wheels relative positions not suggested or required by the objects apparently in view by Barnes or A. & H. or others, for a purpose.

73 4th. Added a second movement to the housing of a caster for a purpose.

All by means of an anti-friction wheel in a specified position and a relieved bearing of vertical rotation.

Respectfully,

JAMES W. SEE,
Martin's Attorney.

Hamilton, O., Oct. 12, 1876.

Room 153.

DEPARTMENT OF THE INTERIOR,
U. S. PATENT OFFICE,
WASHINGTON, D. C., *Oct.* 19, 1876.

Alexander C. Martin, care James W. See, attorney, Hamilton, Ohio.

Application for caster. Filed Sept. 19, 1876.

If applicant will define in his claim his "housing B" as "having an elliptical opening bearing upon a point opposite to and farthest from the anti-friction wheel F" the case will pass all reference.

A. G. WILKINSON, *Examiner.*

HAMILTON, OHIO, *Oct.* 23, 1876.

Hon. Commissioner of Patents.

SIR: I have the honor to transmit herewith corrected specification and modified claim in case of Martin, application for patent caster, filed Sept. 16, 1876.

Very respectfully, J. W. SEE, *Attorney.*

HAMILTON, OHIO, *Oct.* 23, 1876.

Examiner in charge:

Applicant's attorney is disposed to believe that he has failed in his specification to properly exhibit the functions of applicant's novel combination.

He declines to avoid effort by accepting for his client a meretricious claim. He withdraws all claims as presented and substitutes specification and claim attached hereto.

He requests that no reference be disregarded in its possible bearing, and that novelty in applicant's combination be given due consideration.

If thought necessary, applicant will furnish elemental model illustrating more fully the principle of action and elemental functions.

74 Very respectfully, JAMES W. SEE,
Martin's Attorney.

Specification Describing an Improved Caster Invented by Alexander C. Martin, of Hamilton, Butler County, Ohio.

This invention relates to that class of casters which are to be placed under pieces of furniture or other articles for the purpose of rendering them more conveniently movable.

The objects of the improvements are to secure freedom from pivotal wear of carpet or floor, increased mobility, and the disposition of the material in the line of strain.

In the accompanying drawing Fig. 1 is an elevation of a caster embodying my improvements. Part of Fig. 1 is vertical

section. Fig. 2 is a side elevation, and Fig. 3 is a part elevation, exhibiting the portion cut away in Fig. 1.

Common casters in swiveling pivot upon the floor. The point of pivot motion is the point of contact between wheel and floor. Such casters pucker and wear carpets, and are sluggish in their swiveling action. If to the common caster is added a second floor wheel it will be found that in swiveling the wheels turn in opposite directions. The pivot point of floor contact no longer exists; but, if owing to irregularities of floor surface but one of the floor-wheels bears upon the floor, the beneficial effect of the second wheel is practically nullified and the caster becomes in point of fact a one-wheeled caster.

The second wheel has been before added to casters, but for the reason specified the addition has not succeeded in suppressing the pivotal point upon the floor, if the floor was irregular.

Erase. One important feature of my improvement consists in making the floor-wheel axis oscillating with reference to the article to which the caster is attached. The axis of oscillation is horizontal and at right angles to the axis of the floor wheels and allows the floor-wheels to take bearings on a floor regardless of the floor's irregularity, with reasonable limits.

A further improvement consists in so arranging the parts that the oscillation of the floor wheels' axis may be comparatively free from friction.

This is effected by so placing an anti-friction wheel in the oscillating parts that the oscillating motion may not be hindered by the friction of the swiveling motion.

Referring to the drawing, A is a flange from which depends the stem or boss C. This boss serves as a pivot for the swiveling motion, as a draft pin for the wheel-housing, and as a means of uniting the parts. The housing B furnishes bearing supports for the two floor wheels E E.

The housing may swivel or revolve in a horizontal plane upon the stem C and allow the axis of the floor wheels to take a position at right angles to the line of travel of furniture.

75 Were only a swiveling motion of the housing desired the fit of the housing upon its pivot might be horizontally close, allowing looseness enough only for swiveling rotation; but, in order to allow both floor wheels to bear upon an uneven floor, it is necessary that the housing should oscillate upon a horizontal axis. This axis is the center of the anti-friction wheel F, placed centrally between and vertically above the floor wheels E E. The axis of the anti-friction wheel and floor wheels are at right angles to each other.

Erase. In order that the oscillating motion of the housing may not be interfered with by the fit of the pivot on which it swivels horizontally, the housing is so cut away and relieved at its pivot bearing as to allow the necessary amount of oscillating motion and at the same time retain its qualities of vertical pivot bearing, draft pin, and means of union.

Nothing is added to the pivot bearing. The interfering parts are simply removed or suppressed.

The anti-friction wheel F serves not only as an element in the oscillation motion, but adds ease to the swiveling motion. The arrangement of the anti-friction wheel in the position specified places continuous metal between the floor and the flange A. The stem C is thus subjected to no canting strain.

I claim as my invention—

Erase.

In a caster, the combination of the housing B, anti-friction wheel F, and floor wheels E E, when the anti-friction wheel is located centrally between and vertically above the floor wheels, for the purpose and substantially as specified.

In a caster, the combination of the flange A, stem C, housing B, and floor wheels E E, so arranged that the axis of the floor wheels may oscillate with reference to the plane of the flange A.

Erase and insert E, am'd't Nov. 2, 1876.

ALEXANDER C. MARTIN,
By JAMES W. SEE, *Attorney.*

Hamilton, Ohio, Oct. 23, 1876.

DEPARTMENT OF THE INTERIOR,
U. S. PATENT OFFICE,
WASHINGTON, D. C., *Oct.* 26, 1876.

A. C. Martin, care James W. See, Hamilton, Butler Co., Ohio.

Furniture casters. Application filed September 16, 1876.

The examiner, in official letter of 19 inst., suggested all he felt that he could possibly allow, considering the state of the art. Applicant's present amended first claim could not be allowed, as it is for just what in every letter the office has stated that it could not allow, viz., "adding the usual friction roller in the usual way to two wheels, also old." This is a mere double use.

The 2d amended claim could not be allowed, even were applicant the first to use two wheels, for it is not for devices, but for a result or function (never patentable), applicant claims "so ar-
76 ranged that the axis may oscillate, &c." A dozen inventions may do this and yet not be equivalents of applicant's arrangement of devices, to which alone he is entitled. Just as stated in letter of 19th, the examiner thinks that in granting the claim there suggested he, if anything, errs on the liberal side.

A. G. WILKINSON, *Examiner.*

HAMILTON, OHIO, *Oct.* 31, 1876.

Hon. Commissioner of Patents.

SIR: I have the honor to transmit herewith amended specifica-

tion and claim and communication to examiner in charge, all in case of "Martin, caster, filed Sept. 16th, 1876." Room 153.

Very respectfully, JAMES W. SEE,
Martin's Attorney.

HAMILTON, OHIO, *Oct.* 31, 1876.

To the examiner in charge.

Subject: Martin's caster. Filed Sept. 16, 1876.

Examiner, in letter Oct. 26, states with truth, "A dozen inventions may do this and yet not be equivalents of applicant's arrangement of devices," to which might be added a dozen devices not inventions, &c.—might. It is desired, with the above in view, that applicant may be allowed the utmost breadth of action which the just, though rigid, lines of "functional freedom" will justify. Applicant amends in belief that "mechanical equivalents" are within these confines and not in opposition to examiner's suggested claim.

Very respectfully, JAMES W. SEE,
Martin's Attorney.

Amendments to Specification and Claims, Martin's Caster. Filed September 16th, 1876.

Specification.

Cancel the sentence beginning "In order that the oscillating motion" and ending "draft pin and means of union" and substitute—

Canceled Nov. 20, 1876. D.

77 It is also necessary that the housing should be capable of having a compound motion upon the central pivot. It must revolve upon a vertical axis and oscillate upon a horizontal axis. This compound bearing is formed by making the housing bearing slightly elliptical and making its collar bearing in rocker form, as shown in Fig. 3. The rocker may be on the side of the hole nearest the anti-friction wheel or on the opposite side. By means of the described relief and rocker bearing freedom for oscillation is secured without interfering with the function of the pivot as a bearing of rotation, draft pin, and means of union.

Claims.

Cancel both and substitute—

Canceled Nov. 20, 1876.

In a caster, the floor wheels E E and an anti-friction wheel, F, in the relative position specified, when combined with the housing B, having its pivot bearing relieved as specified, or its mechanical equivalent, substantially as and for the purpose specified.

ALEXANDER C. MARTIN,
By J. W. SEE, *Att'y.*

Hamilton, Ohio, Oct. 31, 1876.

Room 153.

DEPARTMENT OF THE INTERIOR,
U. S. PATENT OFFICE,
WASHINGTON, D. C., *Nov.* 15*th* 1876.

Alexander C. Martin, care of James W. See, attorney, Hamilton, Ohio.

Application for casters. Filed Sept. 16, 1876.

Part of applicant's claim reads as follows: "Having its pivot bearing relieved as specified, or its mechanical equivalent." Applicant will see at once that all applicant's novelty in entire device is only expressed by words "as specified." This sort of claim has never been allowed, save through some error, since 1870. See Commissioner Fisher's Decisions, p. 107, for 1869, case of Charles Rubens & Co., that ruling never having been reversed by later Commissioners.

Again, "its mechanical equivalent" refers to no specified devices. One cannot say "having a thing done so and so, or its mechanical equivalent." Again, the specification says, "One important feature of my invention is so and so," and, "a further improvement consists in," &c.

Applicant has one novelty only, and should be well aware that
he should not still claim in his nature of invention the anti-
78 friction wheel. Applicant should claim definitely his devices
(which he includes in "relieved as specified") and their equivalents and change specification to correspond as suggested. An appeal from the examiner is, of course, proper at any time, but he can issue no patent unless the specification and claims, fairly and without ambiguity, only cover the novel device.

A. G. WILKINSON, *Examiner.*

Room 153.

HAMILTON, OHIO, *Nov.* 17, 1876.

Hon. Commissioner of Patents.

SIR: I have the honor to transmit herewith in the matter of Martin's application, caster, filed Sept. 16, 1876, amended specification and claim.

The specification and claim as formerly presented are withdrawn.

Should more letters of reference be thought necessary you are requested to insert them in drawing and claim.

Very respectfully, J. W. SEE.

Specification Describing an Improved Caster Invented by Alexander C. Martin, of Hamilton, Ohio.

This invention relates to swiveling casters, and the objects of the invention are to secure in such casters freedom from pivotal wear of carpet or floor and increased mobility in swiveling.

The first object is attained by the use of two floor wheels whose axes are coincident in connection with devices which insure the contact of both wheels with the floor regardless of ordinary irregularities of floor surface. The second object of the invention is a natural result of the suppression of floor friction.

In the accompanying drawing Fig. 1 is an elevation of my improved caster. Part of Fig. 1 is vertical section. Fig. 2 is a side elevation, and Fig. 3 is a part elevation exhibiting the portion cut away in Fig. 1.

Common casters, in swiveling, pivot upon the floor. The point of pivot motion is the point of contact between wheel and floor. Such pucker and wear carpets and are sluggish in their swiveling action. Two rollers side by side will, in swiveling, turn in opposite directions, and it will be found that they roll upon the floor instead of pivoting, as does the single wheel; but if the floor should be irregular, as is often the case, one wheel of the pair would not touch the floor and the two-wheeled caster would become practically a one-wheeled caster.

My improvement consists in making the axis of the two wheels oscillatory with reference to the article to which the furniture
79 caster is attached. The axis of oscillation being at right angles to the floor-wheel axis allows the wheels to accommodate themselves to ordinary inequalities of floor.

Referring to the drawing, A is a flange, from which depends the stem or boss C. This stem serves as a pivot for the swiveling motion, as a draft pin for the wheel housing, and as a means of uniting the parts. The housing B furnishes bearing supports for the two floor wheels E E and the anti-friction pivot wheel F. The latter wheel is situated centrally between and vertically above the floor wheels. The housing swivels upon the stem in the usual manner. Were only a swiveling motion of the housing desired its fit upon the central pivot might be close, allowing only looseness enough for the swiveling action; but the object sought by my improvement demands that the housing should have a compound motion with reference to the central pivot. It must revolve upon a vertical axis and oscillate upon a horizontal axis. This compound bearing is formed by making the housing bearing slightly elliptical and the housing's collar bearing in rocker form, as shown in Fig. 3. The rocker may be on the side of the hole nearest the anti-friction wheel or on the opposite side, and the axis of the rocker should be in line with and a continuation of the axis of the anti-friction wheel F, so that the anti-friction wheel may not impede the oscillating motion. By means of the relief resulting from the elliptical nature of the housing opening and the rocker bearing freedom for oscillation is secured without interfering with the functions of the central pivot as a bearing of rotation, draft pin, and means of union.

I claim as my invention—

A furniture caster composed of the following elements: The floor wheels E E, the anti-friction pivot wheel F, the housing B, the elliptical housing opening or its mechanical equivalent, and the rocker-formed collar bearing or its mechanical equivalent, all combined so

A.D. 1840. Dec 23. N° 8749.
MACKELCAN & MURDOCH'S SPECIFICATION.

No. 150.
Pioneer Castor Co
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Spiegelhalter
} p. 81

FIG. 22.

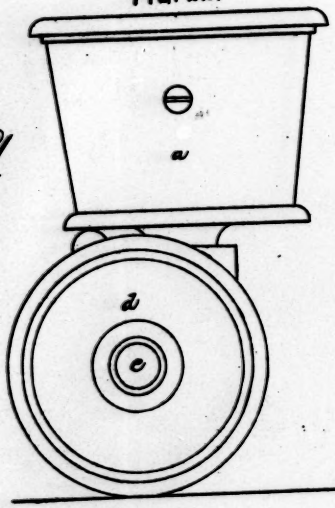


FIG. 23.

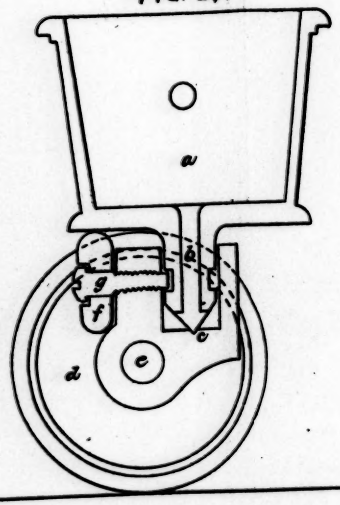


FIG. 24

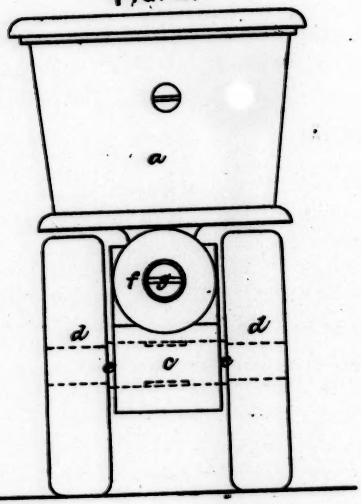


FIG. 25.

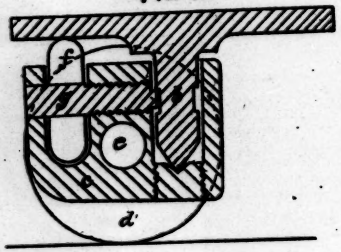


FIG. 26.

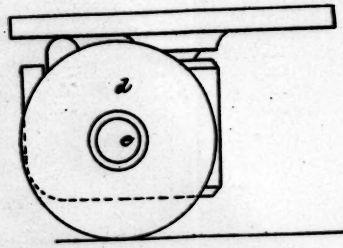


FIG. 28.

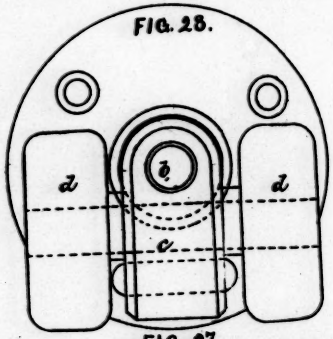


FIG. 27.

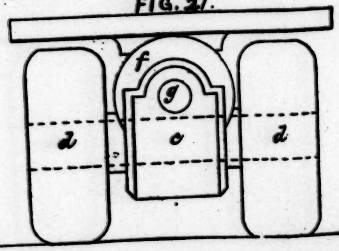
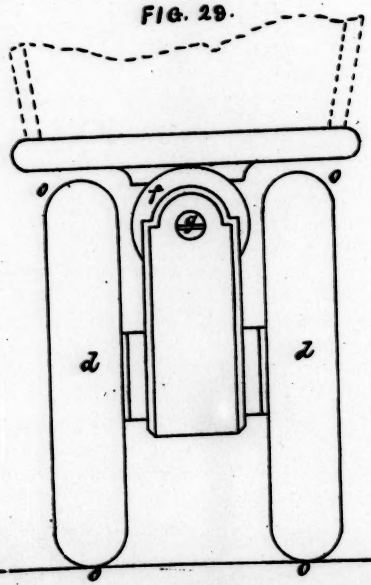


FIG. 29.



as to allow the floor-wheel axis to oscillate horizontally, substantially as and for the purpose specified.

ALEXANDER C. MARTIN,
By J. W. SEE, *His Attorney.*

Hamilton, Ohio, Nov. 17, 1876.

HAMILTON, OHIO, *April* 16, 1878.

Hon. Commissioner of Patents.

DEAR SIR: I have the honor of transmitting herewith a postal order for $20.00. It is the final fee on patent of "A. C. Martin's furniture caster, allowed Nov. 24, 1876."

It is applicant's desire that this patent should issue on the first issue day in May, in order that the date may be short, having but one figure.

Please consider this instruction issue as referring to that future day.

Yours truly,

JAMES W. SEE,
Attorney for Martin.

80

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the bound volumes of this office of a tracing of figures 22, 23, 24, 25, 26, 27, 28, 29 and a description of same in the matter of the English letters patent granted Mackelcan and Murdock December 23, 1840, number 8749, improvement in tables and other furniture.

In testimony whereof I, E. M. Marble, Commissioner of Patents, have caused the seal of the Patent Office to be affixed this 15th day of May, in the year of our Lord one thousand eight hundred and eighty-three, and of the Independence of the United States one hundred and seventh.

E. M. MARBLE,
Commissioner.

Portion of English Patent No. 8749, *A. D.* 1840.

Tables and other furniture.

Mackelcan and Murdock specification.

(Here follows diagram marked p. 81.)

Figure 22 shows a side elevation, figure 23 a section, and figure 24 a front elevation, of a caster provided, in addition to a pair of running wheels (as in the last described), with an anti-friction roller, which, while it entirely prevents all lateral friction, confers upon the caster an extraordinary degree of strength and facility of motion. At (*a*) is a common socket having a pivot (*b*), the conical extremity

of which rests in a pivot hole made in the axle block (*c*). (*d*) (*d*) are the bowls, which revolve freely on their pin (*e*). At (*f*) is a
82 strong anti-friction wheel, the axis (*g*) of which is a stout pin screwed into the solid metal of the axle block, but having its extremity (reduced and polished) so far protruding into an annular groove in the vertical pivot (*b*) as lightly to garter it and prevent the lower part of the castor from dropping off when the furniture may be lifted from the floor. By this addition of the wheel (*f*) it will be noticed that the previous oblique direction of the force is changed entirely into the vertical; that the friction arising from the weight upon the leg of the table when the same is turned is supported upon two points, namely, the point of the pivot and the periphery of the anti-friction wheel; consequently there cannot be any lateral friction, there being no oblique or lateral surfaces in motion that even touch each other. The whole weight or force being thus directed entirely upon the horizontal axles of the wheels confers such strength and smoothness of action that castors on this principle may be made of much less weight than others to sustain and work under any given load.

Figures 25, 26, 27, 28 are designed to show the application of the same combination of wheel-work to that denomination of castors distinguished by the term "plate castors." Supposing the sockets in figures 22, 23, and 24 to be removed, it will be observed that there will remain essentially the same mechanism to work the plate caster as delineated in figures 25, 26, and 27 (figure 28 being merely a plan of the same plate caster). The correspondence of the various parts in these several figures are [is] also indicated by the recurrence of the same letters of reference; but as plate casters are usually applied to heavier and coarser articles than socket castors, they are consequently chiefly made of iron, of greater massiveness, and with less regard to finish.

Figure 29 is merely introduced to show that plate castors of this novel kind are, owing to the position and form of the axle block, adapted to receive wheels of great diameter without raising the
83 furniture to an extraordinary height, thus affording the facility of rolling over very thick carpets, or, where there are no carpets, of surmounting very considerable asperities or irregularities of surface.

It would also be proper to notice that the circular form in the cross-section given to the bearing periphery of the bowls, as shown at O O in figure 29, is preferred in all cases where the surface rolled upon is sufficiently hard to prevent any permanent indentations.

(Here follow diagrams marked pp. 84 & 85.)

G. L. Bailey,

84

Furniture Caster.

No. 12,578. Patented Mar. 20, 1855.

Fig. 4.

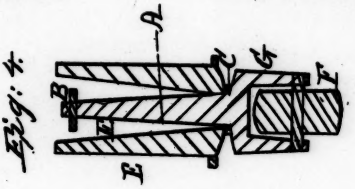


Fig. 3.

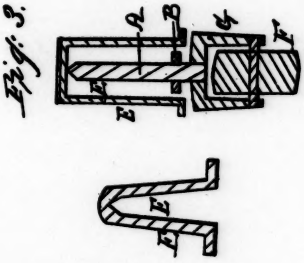
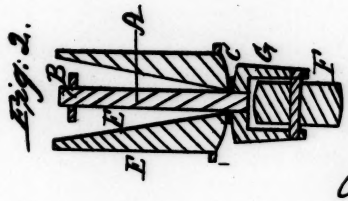
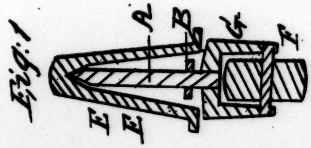


Fig. 2.



No. 150.
Thomas Castor Co
Springfield Vt
4 84

Fig. 1



Defendant's Exhibit Plimpton Patent
No. 37,305, Jan 6, 1863

U.S. Circuit Court.
District of Indiana.
The Phenix Caster Co.
vs.
Augustus Spiegel et al.

J. L. Plimpton.
Parlor Skate.

Philip Mauro
Solicitor

No. 37,305. Patented Jan. 6, 1863.

No. 150.
Phenix Caster Co.
vs.
Spiegel et al.
} p. 85

Fig. 1.

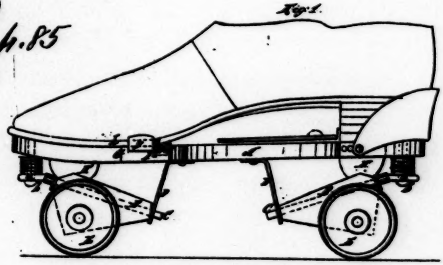


Fig. 2.

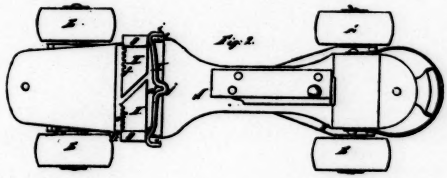


Fig. 3.

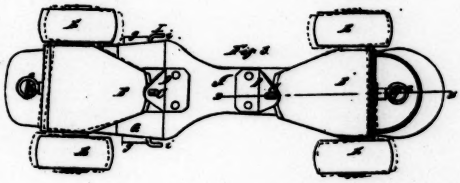
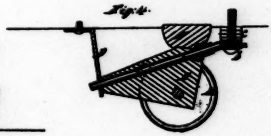


Fig. 5.

Fig. 4.



Witnesses:
M. A. Partridge
Jas. A. Rhodes

Inventor:
James L. Plimpton

Defendant's Exhibit Plimpton Patent
No 55,901, June 26. 1866
U.S. Circuit Court
District of Indiana
The Phenix Caster Co
vs
Augustus Spiegel et al

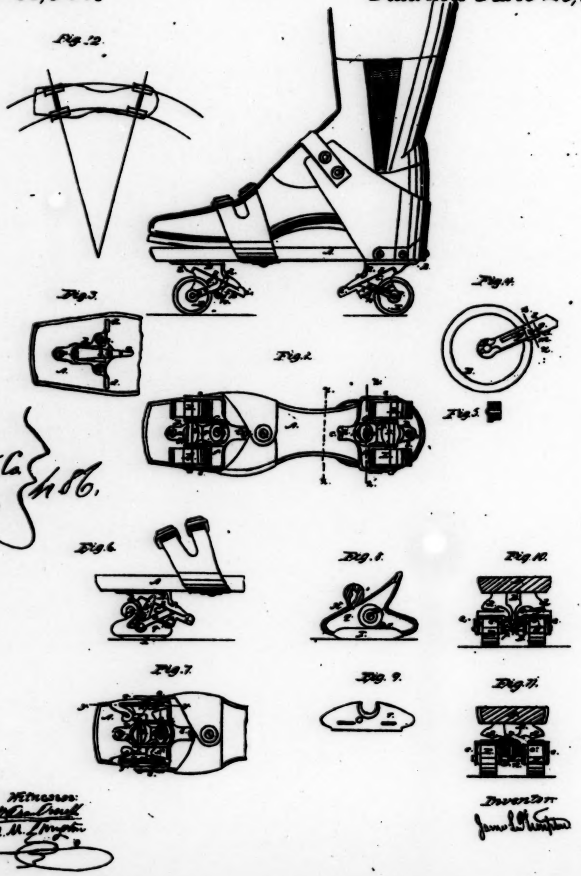
Philip Pfleiderer
Notary Public

J. L. Plimpton,

Parlor Skate,

86

No. 55,901. Patented June 26, 1866.



No. 150,
Phenix Caster Co
vs
Spiegel et al

Witnesses:
[illegible]
[illegible]

Inventor
[illegible]

87 DEFENDANTS' EXHIBIT PLIMPTON PATENT No. 55901, June 26, 1876. Philip Mauro, Notary.

U. S. Circuit Court, District of Indiana.

THE PHENIX CASTER CO.
vs.
AUGUSTUS SPIEGEL *et al.*

UNITED STATES PATENT OFFICE.

JAMES L. PLIMPTON, of New York, N. Y.

Improved Skate.

Specification forming part of Letters Patent No. 55901, dated June 26, 1866.

To all whom it may concern:

Be it known that I, James Leonard Plimpton, of the city, county, and State of New York, have invented a new and improved skate; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

(Here follows diagram marked p. 86.)

Figure 1 is a side view of a parlor or roller skate applied to the foot; Fig. 2, a bottom or under view of the same; Fig. 3, an under view of a plate pertaining to the same; Fig. 4, a side view of a roller pertaining to the same, with its outside bearing and catch or fastening for holding it on its shaft; Fig. 5, a section of Fig. 4, taken in the line *x x;* Fig. 6, a side view of the front part of the skate with runners attached; Fig. 7, a bottom or under view of Fig. 6; Fig. 8, a section of Fig. 6, taken in the line *y y;* Fig. 9, a detached inner side view of a plate pertaining to the runners of the skate; Fig. 10, a transverse vertical section of Fig. 2, taken in the line *z z;* Fig. 11, a transverse vertical section of Fig. 2, taken in the line *z' z';* Fig. 12, a diagram showing the position assumed by the rollers or runners in turning a curve.

Similar letters of reference indicate corresponding parts.

This invention relates to certain improvements in roller and other skates patented by me January 6, 1863; and it consists in a novel and improved construction and arrangement of the several parts, whereby several advantages are obtained over the old or original mode of construction, as hereinafter fully set forth.

A represents the stock or foot-stand of the skate, which may be constructed in any proper manner; and B B represent two metal plates, which are firmly secured to the under side of the stock or foot-stand, one near the toe and the other at the heel of the same.

These plates B B are of triangular form (see Fig. 3,) and may be secured to the stock or foot-stand by a screw, *a*, one near each angle or corner.

At the angular end of each plate B there is a socket, *b*, and from the socket of each plate there extends longitudinally and centrally an inclined ledge, *b*, the outer end of which is rounded to form a journal, *c*, (shown clearly in Fig. 3,) and at the broad ends of the plates B B there are pendent projections *d d*, which are shown clearly in Figs. 10 and 11. These plates, it will be seen by referring to Fig. 1, are secured to the stock or foot-stand in opposite positions, so that the inclined ledges *b b* will extend down from the front and rear ends of the same toward a point in a vertical line passing about through the center of the stock or foot-stand.

C C represent what may be termed the hangers, the same being composed of four inclined pendent bars *e e e' e'*, extending down from a bar, *f*, having a bar, *g*, crossing it at right angles. The bars *g* have at one end a journal to fit into a socket of the plates B B, and the opposite ends of the bars *g* are provided with sockets *i* to receive the journals *c* of said plates B. This arrangement admits of the stock or foot-stand having a lateral tilting movement either to the right or left.

In the lower parts of the inclined pendent bars *e e e' e'* of each hanger C there is inserted a shaft, D, on which rollers E are placed so as to turn loosely. This shaft has a head at one end, and a sliding key, F, passes through the opposite end, said key being flattened at one part sufficiently to admit of an oblong slot, *j*, being made longitudinally through it to allow a pin, *k*, in one of the bars *e* to pass through, said pin *k* serving as a guide for the key. The key is prevented from casually drawing out from the hole in shaft D by having a slot, *l*, (see Fig. 4,) at the outer end of slot *j*, at right angles to it, in which slot *l* the pin *k* may be fitted, and the key F is prevented from being shoved laterally, so as to prevent the pin *k* from casually getting out of *l* by means of a button, G, which is fitted on the pin *k*, and has a flange in it at one end to fit over the side of F. When the key is to be withdrawn from the hole in shaft D, to admit of the removal of the latter, the button G is turned so that its flange *m* will be at the outer end of the key F and admit of the key F being shoved laterally, so that the pin *k* may be adjusted in the slot *j* and admit of a longitudinal movement of the key. By this arrangement the shafts D are firmly secured in the hangers, and at the same time may be readily removed therefrom when necessary or required.

The rollers E are placed on the shafts between the arms *e e' e e'*, as shown in Fig. 2, and said rollers have their peripheries covered with emery, or have a roughened surface produced in any proper way, in order to prevent them from slipping.

The hangers C C are secured to the plates B B by screws *n*, which pass through the center of the bars *g* of the hangers and into the inclined ledges *b b* of the plates B, said screws having a plate, *o*, on them, between which and the bars *g* a spring, *p*, of india-rubber or other suitable material, is placed. These springs *p* keep the hangers

in contact with the plates B, and prevent all unnecessary play or vibration of the same in an upward direction, and control the turning, tilting, or canting of the stock or foot-stand.

In consequence of the ledges *b b* of the plates B B being inclined, it will be seen that if the stock or foot-stand A be tilted or inclined either to the right or left the shaft-hangers C C, and consequently the shafts D, will be cramped, so as to form radii of a circle, (see Fig. 12,) and the skate will consequently move in or describe a curve. The skater, therefore, has perfect command over the skates, and is enabled to perform curves, gyrations, and evolutions with the greatest facility.

When the invention is to be used on ice, runners are employed, constructed and applied as follows: Upon the shafts D there are placed loosely what may be termed "clamps," H, composed of two parts, *g r*. The parts *g* may be of any ornamental design, (that of a swan is here represented,) and the other part, *r*, is simply a plate secured to *g* by a screw, *s*, the runner I being between *g r*. The runners I have smooth running surfaces, with angular edges, so that they may be reversed when the inner edges lose their angularity by wear, and a fresh, sharp edge obtained; and when both edges of one surface become warn the runner may be inverted and two more angular or sharp edges obtained. Thus, each runner has four angular edges, which may be successively used before the runner will require to be sharpened.

The clamps H are retained in proper position on the shafts D by india-rubber or other washers, J, (shown clearly in Fig. 7.) The stock or foot-stand is prevented from tilting beyond a proper distance in consequence of the bars *f* of the hangers coming in contact with the pendent projections *d d* of the plates B B, while the clamps H on the shafts D have their movement thereon limited by the ends of the wings of the swan and the tail coming in contact with the bars *f*.

By this mode of construction I obtain a far stronger and more durable skate than the one originally devised. The stock or foot-stand is more firmly supported, and the ankle of the skater is relieved from that constant and tedious effort to keep the stock or foot-stand in a horizontal position, or to prevent it from casually tilting or canting laterally. All unnecessary play of the parts, and consequently much wear and tear, is avoided.

Having thus described my invention, I claim as new and desire to secure by letters patent—

1. The construction of the plates B and hangers C, arranged and applied to the stock or foot-stand, to operate in the manner substantially as and for the purpose set forth.

2. The key E, provided with the slot *j l* and the button G, and arranged in connection with the pin *k*, substantially as and for the purpose set forth.

3. The springs *p*, applied to the screws *n*, which secures the hangers C to the plates B, for the purpose of preventing vertical or upward-and-downward play of the hangers, and controlling the turning, tilting, or canting of the stock or foot-stand, as set forth.

4. The clamps H, composed of two parts, *g r*, for holding the reversible runners I.

5. The reversible runners, arranged substantially as shown, for the purpose specified.

JAMES L. PLIMPTON.

Witnesses:
WM. DEAN OVERELL.
M. M. LIVINGSTON.

89 DEFENDANTS' EXHIBIT PLIMPTON REISSUED PATENT No. 3906, April 5, 1870. Philip Mauro, Notary.

U. S. Circuit Court, District of Indiana.

THE PHENIX CASTER CO.
vs.
AUGUSTUS SPIEGEL *et al.*

UNITED STATES PATENT OFFICE.

JAMES L. PLIMPTON, of New York, N. Y.

Improvement in Skates.

Specification forming part of Letters Patent No. 37305, dated January 6, 1863; Reissue No. 3906, dated April 5, 1870.

To all whom it may concern:

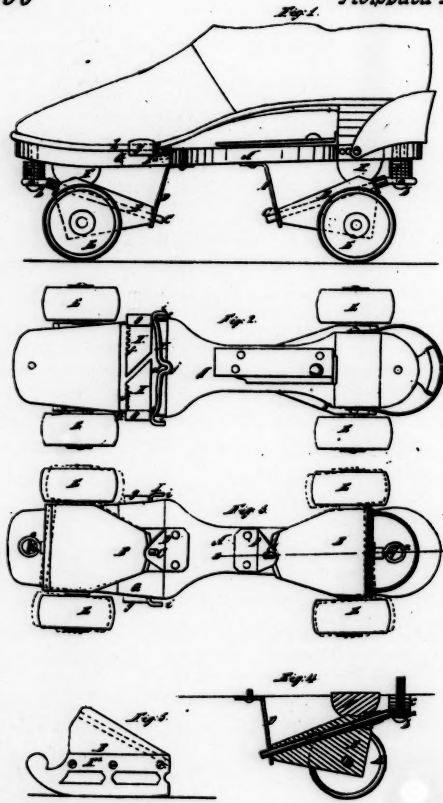
Be it known that I, James L. Plimpton, of New York city, in the county and State of New York, have invented a new and useful improvement in skates; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new construction of skate, and to a new manner of securing the rollers or runners to the sole or foot support of the same with an object of producing, by the transverse rocking motion of the said foot-support, the guiding of the skate in either direction—that is to say, the turning of the rollers or runners to the right or left to cause the skate to move in a circle. Another object of the invention is to retain the same broad base while turning as there is while moving the same in a straight direction; also to provide an adjustment of the hangers on which the rollers or runners are hung, so that a given inclination of the foot will produce a larger or smaller curve during motion.

The invention consists in so hanging or securing the rollers or runners to the foot-support or sole that the rocking motion of the latter will cause the said rollers or runners to swing sidewise to run the skate in the line of a circle, and thereby to guide the same to either side. The invention consists also in so securing the hanger

Defendants' Exhibit Plimpton Reissued Patent
No 3,906, April 5, 1870 Philipsburg
U.S. Circuit Court
District of Indiana J. L. Plimpton.
The Phenix Caster Co
vs.
Augustus Spiegel et al Parlor Skate.

No. 3,906 Reissued Apr. 5, 1870.



Witnesses:
W. S. Partridge
Jas. R. Roberts

Inventor:
James L. Plimpton

that its inclination can be adjusted, thereby regulating the horizontal swing of the rollers or runners to a greater or less curve with a greater inclination of the foot-support. For learners this adjustment will be very convenient, as the same skate answers for different degrees of proficiency of the skater. The invention consists, further, in providing springs or cushions in combination with the hangers, the said springs preventing the rattling of the skate, and tending to throw the foot-support back to a horizontal position, and the rollers or runners into the straight direction, whenever the weight is removed from one side of the foot-support. Finally, the invention consists in a novel arrangement of devices for fastening the foot-support, if a separate plate, to the boot or shoe of the skater, the said devices being, however, not necessarily connected with the other parts of my invention, nor with any other peculiar construction of skate.

In the accompanying drawing,

(Here follows diagram marked p. 88.)

Figure 1 represents a side view of a skate having my improvements. Fig. 2 is a plan or top view of the same. Fig. 3 is an inverted plan view of the same. Fig. 4 is a detail longitudinal section of a portion of the same, the plane of section being indicated by the line *x x*, Fig. 3. Fig. 5 is a detail side view of one of the runners.

Similar letters of reference indicate corresponding parts.

A in the drawing represents the foot-support or sole of the skate.

To the under side of the foot-support are pivoted, by longitudinal inclined rods C C, two hangers or blocks, B B, of suitable shape. The rods C are fastened to the under side of the foot-support, near the ends of the same, in inclined positions, so that their inner ends are lower than the outer. They are held in place by ears or plates D projecting downward from the foot-support, and by screws or pins *b b* secured into said foot-supports. The pins *b* fit through eyes *a* formed at the upper ends of the rods C. Washers *c c* are interposed between the said eyes *a* and the foot-support. By increasing or decreasing the number or thickness of the said washers, or by changing their position upon the screws, the inclination of the rod C can be regulated. The screws *b* may, if desired, be at the lower and the ears D at the upper ends of the rods C.

E E are rollers hung on the sides of the hangers, one roller on each side of each hanger. F F are springs or cushions, interposed between the hangers and the foot-support or attachments thereof, said springs aiding to support the foot when the weight rests upon the stake, and also when the weight is removed, to bring the parts to place, and prevent the same from rattling or working too freely.

It will be seen that as the hangers are hung on an incline pivot, or its equivalent, which is rigidly connected with the foot-support, the rocking motion of the latter will carry the higher end of said pivot less far away from the center-line of the skate than the lower end of the same; and that, therefore, by the peculiar oblique position thus imparted to the pivot, the hangers will also be set obliquely

to the center-line of the foot-support, without, however, changing its position vertically. The more the foot-support is canted, the more will the hanger be swung aside, and with it the rollers E on it. Thus the rocking motion of the foot-support will cause the rollers to be swung aside, in the manner indicated by red lines in Fig. 3, to run the skate in a curve. The diameter of such curve is made larger or smaller in accordance with the degree of transverse inclination given to the foot-support.

The aforementioned swinging motion imparted to the hanger by the rocking of the foot-support does, however, not affect the bearing of the rollers—that is to say, they remain with their full edges on the floor, to whatever degree they may be swung to the side. The full bearing is thus retained, the process of skating considerably facilitated. The inclination of the pivot C causes, as was shown above, the swinging of the hangers. The more the pivot is inclined the greater will consequently be the swing of the hangers at a certain inclination of the foot-support. The adjustment of the said pivot by means of the washers or their equivalents serves, therefore, to regulate the curve described by the skate at a given inclination of the foot-support.

In place of the rollers E, runners F* may be attached to the sides of the hangers, their positions being regulated in the same manner as those of the rollers.

In the upper surface of the foot-support is or may be formed a transverse groove or recess, *d*, over which a metal plate, G, is secured. This plate is bent downward and inward at its ends, so as to extend a short distance underneath the foot-support A. In each side of the plate G is made a slot, *e*, and through each such slot is placed a plate, H, into a space between the bottom of the recess *d* and the plate G. The plates H H have each a rack, *f*, formed at their front edges, as shown in Fig. 2. Each plate H is curved upward and inward at its outer end, so as to form a hook, G, to catch over the edge *h* of the sole of the boot or shoe. In the recess *d*, directly behind the plate H, there is placed a spring, I, which is formed of a single piece of wire bent backward at its ends, as shown at *i i*, and also bent at its center to form a horizontal projection, as shown at *j*, in Fig. 2. This wire at its ends bears against the back edges of the plates H H, and keeps the racks *f* at the front edges of said plates engaged with the front edges of the slots *e*. The plates H H are thereby retained in proper position or prevented from being forced out laterally from the foot-support. In order to release the plates H H that they may be adjusted to the width of the sole, the ends of the spring I are bent down so as to enter the small vertical notches *k* at the back ends of the slots *e*, as in Fig. 1, and thereby be free from the plates H, so that the latter may be pressed backward in the recess *d*, and the racks *f* be free from the front edges of the slots *e*. This adjustment of the wire I is indicated by red lines in Fig. 1.

This fastening for a skate is very effective and simple, and may be applied at a small cost to almost every variety of skate.

The heel-fastening shown in Figs. 1 and 2 is substantially the same as was patented by me March 4, 1862.

A great number of variations and modifications may be employed without departing from the principle of my invention, and I therefore do not confine myself to the precise arrangement of parts as herein shown and described.

Having thus described my invention, I claim as new and desire to secure by letters patent—

1. The hanger B, attached to a rocking foot-support, and vibrating upon inclined rods attached to said support in the manner shown and described, and for the purpose specified.

2. So attaching the rollers or runners to the foot-support of a skate that they will be swung to run the skate in a curved line to the right or left by the rocking motion of the foot-support, as set forth.

3. The combination, with the shaft on which the rollers are placed, of the rocking foot-support A, springs F, hanger B, and inclined rod C, all arranged substantially as set forth, to enable said rollers to take a curve by a slight twist of the foot.

4. The inclined rod C, held at one end by the rigid piece D, and adjustably attached at the other to the foot-support A for the purpose of determining the degree of curvilinear motion, in the manner described.

5. The plates H H, provided with hooks *g* at their front ends and racks *f* at their front edges, in combination with the spring I and plate G, the latter being applied to the foot-support A, and provided with slots *e* at its ends, all arranged to form a fastening for the skate, as set forth.

JAMES L. PLIMPTON.

Witnesses:
GEORGE W. MABEE.
A. v. BIESEN.

92 DEFENDANTS' EXHIBIT PLIMPTON REISSUED PATENT No. 4292, March 7, 1871. Philip Mauro, Notary.

U. S. Circuit Court, District of Indiana.

THE PHENIX CASTER CO.
vs.
AUGUSTUS SPIEGEL *et al.*

UNITED STATES PATENT OFFICE.

JAMES L. PLIMPTON, of New York, N. Y.

Improvement in Skates.

Specification forming part of Letters Patent No. 37305, dated January 6, 1863; Reissue No. 3906, dated April 5, 1870; Reissue No. 4292, dated March 7, 1871.

Division A.

To all whom it may concern:

Be it known that I, James L. Plimpton, of New York city, in the

county and State of New York, have invented a new and useful improvement in skates; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

My invention consists in constructing a skate so that the transverse rocking of the skater's foot will cause the rollers or runners to cramp or change their horizontal position so as to run the skate straight or in curves to the right or left, and at the same time the rollers or runners remain with their full bearings upon the floor or ice to whatever degree they may be swung obliquely while turning curves, thus enabling the skater to steer or guide the skate as desired, and to incline his body from the center of gravity while turning curves.

In the accompanying drawing,

(Here follow diagrams marked pp. 90 & 91.)

Figure 1 represents a side view of a skate having my improvements. Fig. 2 is a plan or top view of the same. Fig. 3 is an elevated plan view of the same. Fig. 4 is a detail longitudinal section of a portion of the same, the plane of section being indicated by the line *x x*, Fig. 3. Fig. 5 is a detail side view of one of the runners.

Similar letters of reference indicate corresponding parts.

A in the drawing represents the foot-support or sole of the skate. To the under side of the foot-support are pivoted, by longitudinal inclined rods C C, two hangers or blocks, B B, of suitable shape. The rods C are fastened to the under side of the foot-support, near the ends of the same, in inclined positions, so that their inner ends are lower than the outer. They are held in place by ears or plates D projecting downward from the foot-support, and by screws *b b* secured into said foot-supports. The screws *b* fit through eyes *a* formed at the upper ends of the rods C. Washers *c c* are interposed between the said eyes *a* and the foot-support. By increasing or decreasing the number or thicknesses of the said washers, or by changing their position upon the screws, the inclination of the rod C can be regulated. E E are rollers hung on the sides of the hangers, one roller on each side of each hanger. F F are springs or cushions interposed between the hangers and foot-support or attachment thereof, said springs aiding to support the foot when the weight rests upon the skate, and also when the weight is removed, to bring the parts to place and prevent the same from rattling or working too freely. It will be seen that, as the hangers are hung on an inclined pivot or its equivalent, which is rigidly connected with the foot-support, the rocking motion of the latter will carry the higher end of said pivot less far away from the central line of the skate than the lower end of the same; and hence, by attaching the hangers so as to vibrate in an oblique direction, the rocking of the foot-support will cause the rollers to move horizontally, as shown by red outlines in Fig. 3, where it will be seen that the rollers upon one side of the skate are nearer together than they are upon the other. The afore-

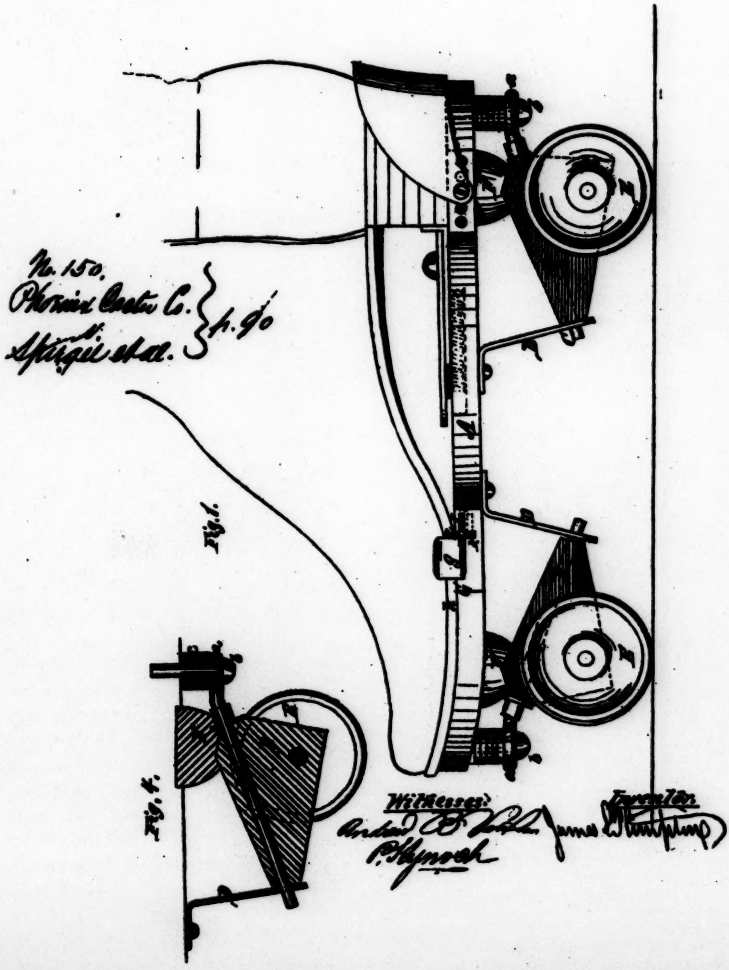
Defendant's Exhibit Plimpton Reissued Patent

U.S. Circuit Court. Nov. 292, March 7, 1871
Philip Pleasants Master
District of Indiana
The Phenix Caster Co 2. Sheets, Sheet 1.
v.s.
Augustus Spurgel et al J. L. Plimpton,

90

Parlor Stove.

No. 4292. Reissued Mar. 7. 1871.



mentioned horizontal motion imparted to the hanger by the rocking of the foot-support does, however, not affect the bearing of the rollers—that is to say, they remain with their full edges on the floor to whatever degree they may be swung to the side, and thus the skate is made to resist the centrifugal force of the skater's body while turning curves. The inclination of the pivot C causes, as was shown above, the swinging of the hangers. The more the pivot is inclined the greater will consequently be the swing of the hangers at a certain inclination of the foot-support. The adjustment of the said pivot by means of the washers or their equivalents serves, therefore, to regulate the curve described by the skate at a given inclination of the foot-support. It will also be seen that, when the foot-support is sufficiently rocked or canted to rest upon the hangers B B, it prevents the foot of the skater from rocking further. To adapt my invention to ice-skating it is only necessary to substitute runners in place of rollers, their relative position being regulated in the same manner as when rollers are applied. By this means of attaching or applying the rollers or runners to the foot-support or its equivalent it will be seen that, when the foot of the wearer of the skate is inclined the foot-support A will also be inclined, and the hangers B B, in consequence of being fitted on the inclined rods C C, will "cramp" or turn so as to cause the skate to describe a curve. Hence, in order to turn in either direction, the skater is only required to incline his foot in the direction he desires to move, and the rollers or runners will be moved or "cramped" in proper position to describe a curve, according to the inclination of the foot.

I do not confine myself to the precise arrangement, as herein shown and described, for cramping or attaching the rollers or runners, as many variations and modifications may be made therein without deviating from the main features of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A skate constructed with rollers or runners that cramp, arranged and operated substantially in the manner and for the purposes as herein set forth.

JAMES L. PLIMPTON.

Witnesses:
W. H. McCLURE.
JOHN DUFFY.

94 UNITED STATES PATENT OFFICE.

JOHN M. LONG, of Hamilton, Ohio.

Improvement in Harvesters.

Specification forming part of Letters Patent No. 38232, dated April 21, 1863; antedated December 4, 1862.

To all whom it may concern:

Be it known that I, John M. Long, of Hamilton, in the county of

Butler and State of Ohio, have invented a new and useful improvement in reaping and mowing machines; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings and letters of reference marked thereon, forming part of this specification.

My invention relates to the class of reaping and mowing machines in which the forward part of the machine is supported and the machine guided by a pair of auxiliary wheels, which, for convenience, I shall designate "pilot-wheels;" and it consists in supporting the part thus carried by the pilot-wheels upon a pivotal bearing, which permits the pilot-wheels, when passing over uneven ground or obstructions in their way, to adapt themselves to the same without affecting the horizontality of the machine or straining any part of the frame, the center or king bolt also having a construction adapted thereto, and the plates being made with side bearings which confine the vibration of pilot-wheels within certain limits, as will hereinafter appear.

I will now proceed to describe my invention, referring to the annexed drawings,

(Here follows diagram marked p. 93.)

of which—

Figure 1 is a vertical axial section, showing the center plates, center bearing, side bearings, and center bolt. Fig. 2 is a perspective view of the pilot-wheels supporting the forward part of a machine, one of the pilot-wheels being considerably elevated by an obstruction without affecting the horizontal position of the frame of machine.

Like letters of reference indicate like parts in the different figures.

A is the axle of pilot-wheels. *a a* are the pilot-wheels. B represents the machine, the forward part of the frame resting upon axle A of pilot-wheels. C is the upper center plate, and D the lower center plate. E is the center bolt. The center plates are made of cast metal. The lower plate, D, is formed with a conical elevation, *b*, at the center, through the apex of which the center bolt, E, passes. At the opposite extremities of D slight projections *c* are formed, which extend upward. *d* is a conical space under the center of D, which accommodates the head of center bolt, E. The upper center plate, C, is circular, and is made with a conical depression on the under side, which rests upon the conical projection *b*, and this constitutes the center bearing, the upper plate, C, being attached to frame B of the machine, and the lower plate, D, being secured to the center of axle A of the pilot-wheels, and the two plates being so adapted to each other that, within certain limits, the pilot-wheels may vibrate or adapt themselves to uneven ground without any resistance at the point of bearing or center. The head of the center bolt, as should be observed, has room in the space *d* to accommodate the amount of vibration that is required; but should the laterally extended part of the machine, which carries the cutter-bar in machines as ordinarily constructed, meet with a resistance, and thus

J. M. Long.

Mower.

No. 38,232 Patented April 21, 1863

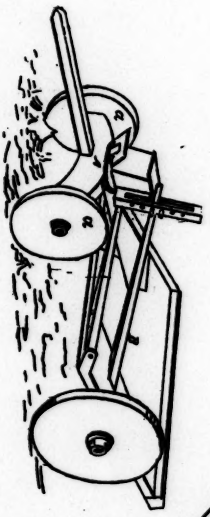


Fig. 1.

No. 150.
Phoenix Cutter Co.
Spiegel Cat.
fig. 93

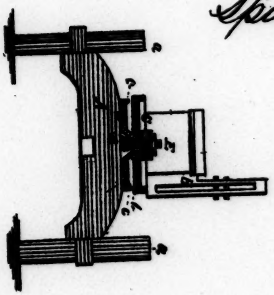


Fig. 2.

Witnesses: J. H. Ellis II
Wm. H. Clark

John M. Long
By Munn & Co Attys

cause the pilot-wheels to be wrenched violently to one side, so as to tend to overturn them, or should any other unusual occurrence tending to produce the same result take place, then the outer extremity of center-plate D will encounter the under face of upper plate, C, and restrain the wheels from overturning or from being unduly thrown up toward a vertical position.

It will be apparent that several modes of applying my invention may be employed, all producing the same result in substantially the same manner. The relative position of the two center plates may be inverted. The projections *c* may be omitted, or other modifications may be made without materially affecting the result.

The advantages of my invention will be sufficiently apparent to persons familiar with the operation of the kind of machines to which it applies. Its importance, however, will not be so obvious to others without considering that the pilot-wheels are connected by a very short axle, so that a considerable vibration at the centre is produced from comparatively slight inequalities of ground, and these occur so constantly that before provision was made to accommodate them, as is done by my invention, a considerable irregularity was communicated to the frame of the machine, and it was also exposed to a constant and trying strain, rendering it after a short time loose-jointed and shackly.

Having described my invention, what I claim as new, and desire to secure by letters patent, is the following:

Constructing the center plates, C and D, with a central pivotal bearing, in combination with the vibratable center bolt, E, and outer bearings, *c c*, substantially as described, and for the purpose specified.

JOHN M. LONG.

Witnesses:
WM. CLOUGH.
GEO. K. STILLMAN.

95 UNITED STATES PATENT OFFICE.

FREDERIC G. FORD, of Bridgeton, New Jersey.

Improvement in Furniture-Casters.

Specification forming part of Letters Patent No. 132,066, dated October 8, 1872.

To all whom it may concern:

Be it known that I, Frederic G. Ford, of Bridgeton, in the county of Cumberland and in the State of New Jersey, have invented certain new and useful improvements in furniture-casters; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

My invention relates to that class of furniture-casters in which the

wheel is attached to a horn surrounding a boss formed on the under side of a plate, and said plate secured by means of a central screw; and the nature of my invention consists in an annular flange or ferrule formed on the upper side of said plate, and fitting in a corresponding groove made in the leg where the caster is applied, said flange or ferrule being on its upper edge provided with pins or teeth to penetrate into the wood, all of which will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing,

(Here follows drawing marked p. 95*a*.)

in which—

Figure 1 is a side view of a table-leg with my caster applied; Fig. 2 is a vertical section of the caster and lower end of the leg; Fig. 3 is an end view of the leg, and Fig. 4 is an enlarged side view of the boss and plate with the flange or ferrule and pins.

A represents the wheel pivoted between arms extending from a horn, B, which surrounds a boss, C, formed on the under side of a plate, D, and the whole secured to the end of a leg, E, by means of a central screw, G. These parts may all be constructed in any of the known and usual ways for such casters. On the upper side of the plate D, and surrounding the central screw-hole, is formed an upward-projecting annular flange or ferrule, *a*, which fits in a similar groove, *b*, made in the end of the leg E. On the upper edge of the flange or ferrule *a* are formed upward-projecting pins or teeth *i i*, which enter the wood as the screw G is tightened. The flange or ferrule *a*, entering the groove *b* in the leg, prevents the wood from splitting or breaking, and also prevents the caster from sliping out in case the screw should get loose. The teeth or pins *i i* entering the wood prevent the plate D from turning.

Having thus fully described my invention, what I claim as new, and desire to secure by letters patent, is—

The annular flange or ferrule *a*, provided with pins or teeth *i i* on its upper edge, and formed on the upper side of the plate D of the caster herein described, to fit in a corresponding groove, *b*, on the end of the leg, and the pins or teeth to penetrate into the wood, all substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 11th day of September, 1872.

FREDERIC G. FORD.

Witnesses:
J. M. MASON.
EDM. F. BROWN.

F. G. FORD. 95a

Improvement in Furniture-Casters.

No. 132,066. Patented Oct. 8, 1872.

Fig. 1.

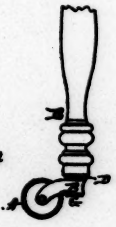


Fig. 2.

Fig. 3.

Fig. 4.

No. 150.
Phoenix Caster Co
vs
Spiegel et al

Witness:
Jas. E. Hutchinson
La. L. Cartwright

Inventor.
Frederic G. Ford.
per Alexander Mason
Attorneys.

Defendants Exhibit Ford Patent
No 102,066. Oct 8. 1872
Philip Abbett
Notary

U.S. Circuit Court
District of Indiana
The Phenix Caster Co
Augustus Spiegel et al

F. G. Ford,

Furniture Caster.

96

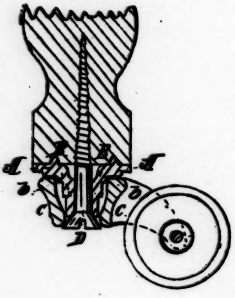
No 58,999. Patented Oct. 23, 1866.

No. 150.
Phoenix
Caster Co.
Springfield

In 96

Fig. 1

Fig. 2



Witnesses:
Andrew Stetson
Wm. H. Shelley

Inventor
Frederic G. Ford

97 UNITED STATES PATENT OFFICE.

FREDERIC G. FORD, of New York, N. Y.

Improved Caster for Furniture.

Specification forming part of Letters Patent No. 58999, dated October 23, 1866.

To all whom it may concern:

Be it known that I, Frederic G. Ford, of the city, county, and State of New York, have invented certain new and useful improvements in casters for cabinet-ware; and do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, and to the figures and letters marked thereon.

(Here follows diagram marked p. 96.)

On these drawings, figure 1 is a view of my improved caster, with a portion of the horn removed in order to show the bearing of the horn and interior construction of the same, also the inclosed central boss of the caster-plate. Fig. 2 is a section view taken through the longitudinal axis of the central screw or line *x x* of Fig. 1.

In these figures similar letters of reference refer to corresponding parts.

One of my improvements consists in the use of a screw passing up through the horn and center of the plate of the caster, thereby fastening said parts to each other and to the article to which the caster is attached, and doing away altogether with the attachment of the caster by means of small nails or screws.

Again, casters of that class to which my improvements apply have certain objections, one being the partial dependence upon the central boss of the horn for a bearing, which tends to strain the central screw inserted through this central boss into the wood above the plate. This central screw not being protected by a casing at its thread, it is evident that pressure upon the horn, and from thence to the lower portion of the shoulder of the screw, will by degrees loosen the firm hold that the thread of the screw first had when inserted into the wood.

My construction of caster enables me to have the central boss of the plate as a steadiment to the shoulder of the screw, while at the same time the whole of the strain of the horn and inclosed caster-roller is received upon the face of the plate; also, the horn is so constructed and positioned with respect to this central boss that it is free from contact therewith, consequently doing away with much friction and making this central boss perform its own proper function merely.

The effect here produced upon the caster with respect to its ease of movement and facility for change of its roller in various directions is marked.

To enable others to make and use my improved caster, I will proceed to describe its construction and operation.

A is the plate of the caster, having projections or other convenient and known means upon its upper surface, so that when placed against the wood the said plate will remain stationary during the movement of the horn and roller.

Upon the under surface of this plate is constructed a central boss, B, so formed that at that part immediately adjacent to the plate there will be a shoulder, *b*, to keep the horn steady in its bearing against the plate A. From this point down to the end of the central boss there is a taper, so that when the screw is inserted through this central boss and plate the boss will terminate or vanish at that part of the inserted screw where the head and shoulder thereof intersect. The result here is that the bearing of the horn C will be all against the plate A; and the screw D will receive its proper and necessary support from the central boss, B, without the pressure of the horn thereon, there being left a space between the interior of the horn C and the central boss, B, and the head of the screw only being exposed, so that when the article of furniture to which the caster is attached is raised the horn is prevented from slipping away from the plate. The screw D passes through the horn C, the plate A, and its central boss, B, and into the wood to which the caster is attached.

What I claim as my invention, and desire to secure by letters patent, is—

1. Combining and arranging the caster by leaving a space between the central boss and horn, so that the horn shall be out of contact with the central boss, thereby relieving the caster of much of its friction, substantially as shown and described.

2. The combination, in a caster, of a central screw and horn with a plate constructed with the boss B, substantially as above shown and described.

3. Constructing and arranging the central boss of the plate with respect to the screw and horn so that the said boss shall support the screw and not be in contact with the horn, in the manner and for the purposes substantially as herein set forth.

FREDERIC G. FORD.

Witnesses:
ANDREW I. TODD.
WM. H. BISHOP.

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Defendants' Exhibit J. T. Barnes
No. 66,116. June 25. 1867.
Philip Phelps
Clerk

U. S. Circuit Court
District of Indiana
The Phenix Caster Co
vs
Augustus Spiegel et al

98

J. T. Barnes,

Furniture Caster.

No. 66,116. Patented June 25, 1867.

Fig. 1.

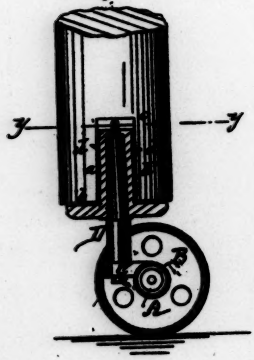
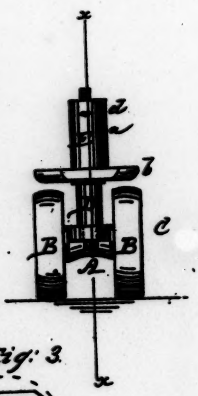


Fig. 2.



No. 150
Phenix Caster Co.
vs
Spiegel et al
} 66,116

Fig. 3.

Witnesses:
Theo Fowler
J. A. Lewis

Inventor:
James T. Barnes
Per Munn & Co
Attorneys

99 DEFENDANTS' EXHIBIT J. T. BARNES, No. 66116, June 25, 1867. Philip Mauro, Notary.

U. S. Circuit Court, District of Indiana.

THE PHENIX CASTER CO.
vs.
AUGUSTUS SPIEGEL *et al.*

UNITED STATES PATENT OFFICE.

JAMES T. BARNES, of Hudson City, New Jersey.

Letters Patent No. 66116, dated June 25, 1867.

Improved Caster.

The schedule referred to in these letters patent and making part of same.

To all whom it may concern:

Be it known that I, James T. Barnes, of Hudson City, in the county of Hudson and State of New Jersey, have invented a new and improved caster, and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by letters patent.

This invention relates to a new and useful improvement on a caster, for which letters patent were granted to me, bearing date October 30, 1866.

The invention consists in having the shank of the caster at one side of the axis of the wheels, whereby the caster is allowed to turn, so that the wheels, when the article to which they are applied is moved, may adjust themselves in line with the movement of the article. The invention also consists in a novel manner of securing the metal socket or sheath, in which the shank of the caster is fitted, in the leg or bottom of the article to which the caster is applied, whereby the socket or sheath may be secured in the leg or bottom of the article with the greatest facility. In the accompanying sheet of drawings—

(Here follows diagram marked p. 98.)

Figure 1 is a side sectional view of my invention, taken in the line *x x*, Fig. 2.

Figure 2, an end view of the same.

Figure 3, a horizontal section of the same, taken in the line *y y*, Fig. 1.

Similar letters of reference indicate like parts.

A represents the axis or axle of the caster, having a wheel, B, secured on each end of it in the manner as shown and described in the letters patent previously granted to me. The axle has an arm, C, projecting horizontally from it, and in the outer part of said arm the lower end of a shank, D, is firmly secured (see Fig. 1). By this means the shank, it will be seen, is out of line with or at one side of the axle A, and consequently the wheels B B will be allowed to adjust themselves in line with the direction of the movement of the article to which the caster is applied whenever said article is moved. This is an important feature of the improvement, and materially augments its value. E represents a metallic socket or sheath, which is inserted into the leg or bottom of the article to which the caster is applied. This socket or sheath is composed of a cylindrical tube, *a*, having a flange, *b*, at its lower end; and into the leg or bottom of the article to which the caster is to be applied there is bored a hole, *c*, to receive the cylindrical portion *a* of the socket or sheath (see Fig. 1). The cylindrical portion *a* is provided with spurs, *d d*, projecting laterally from it at opposite points, and the hole *c* is grooved longitudinally, as shown at *e e*, to receive the spurs *d d* and admit of *a* being shoved into the hole *c*.

When *a* is shoved into *c* the former is turned a quarter of a revolution by grasping the flange *b* with a wrench, and the spurs *d d* cut their way through the wood in a circumferential direction relatively with the hole *c*, and said spurs thereby retain the socket or sheath in the leg or bottom of the article and prevent, in case the article is raised from the floor, the socket or sheath from dropping out of the hole *c*. By this simple means the socket or sheath may be very readily secured in the leg or bottom of the article to which the caster is applied. It is superior to and less expensive than the screw tube hitherto used, and far more reliable than the screwing of the flange *b* to the leg.

Having thus described my invention, I claim as new and desire to secure by letters patent—

1. The axle A, supporting two wheels, B, and having secured at its centre and at right angles thereto the arm C, supporting the shank D, constructed as described, for the purpose specified.

2. I further claim the securing of the socket or sheath E in the leg or bottom of the article to which the caster is applied by means of the spurs *d d*, projecting laterally from the cylindrical part *a* and fitted in the hole *c*, which receives said part *a*, substantially as shown and described.

JAS. T. BARNES.

Witnesses:
WM. F. McNAMARA.
ALEX. F. ROBERTS.

Defendants' Exhibit Hodgson

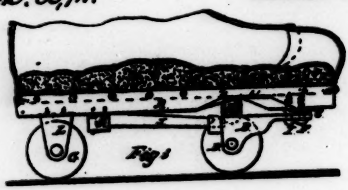
Chas. F. Ill. April 6th Reg

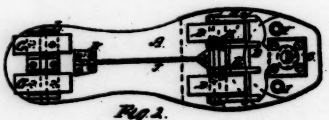
U. S. Circuit Court
District of Indiana
The Phenix Caster Co. vs. Augustus Spiegel et al

Philip Delaney
I. Hodgson,
Patentee State.

100

No. 28,711. Patented Apr. 6. 1869.





No. 150.
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Caster Co
vs.
Spiegel et al.
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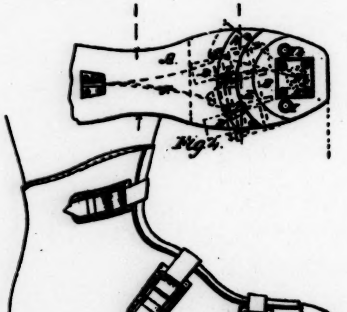


Witnesses
John Kelly
Geo. Fowler

Inventor
Isaac Hodgson

101 DEFENDANTS' EXHIBIT HODGSON, No. 88711, April 6, 1869. Philip Mauro, Notary.

U. S. Circuit Court, District of Indiana.

THE PHENIX CASTER CO.
vs.
AUGUSTUS SPIEGEL *et al.*

UNITED STATES PATENT OFFICE.

ISAAC HODGSON, of Indianapolis, Indiana.

Roller-Skate.

Specification forming part of Letters Patent No. 88711, dated April 6, 1869.

To all whom it may concern:

Be it known that I, Isaac Hodgson, of Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful parlor-velocipede; and I do hereby declare that the following is a full, clear, and exact description thereof, that will enable skilled artisans to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention relates principally to mode of operation of the forward wheel-frame; and it consists in the peculiar construction and manner of attaching the wheel-frame to the sole of the shoe, by which the operator is enabled at pleasure to run in a direct course, or, by the natural horizontal motion of the foot to the right or left, to change the course to a curved track without canting, rocking, or tipping the foot or sole to which the wheel-frame is attached, combined with the arrangement of a spring, which returns the wheel-frame to a direct line when the pressure upon the wheels is removed by raising the foot.

This invention further relates to construction and manner of attaching a padded shoe to the sole, by which the ordinary walking-shoe may be dispensed with, and the comfort of the wearer greatly enhanced.

(Here follows diagram marked p. 100.)

Figure 1 is a profile of my invention. Fig. 2 is an inverted view, showing the mode of attaching the wheel-frame, spring, &c., to the sole. Fig. 3 is a longitudinal vertical section, showing the pad, &c. Fig. 4 is an inverted view of the front wheels, spring, &c., showing their alternating direction.

Similar letters of reference indicate like parts in the several figures.

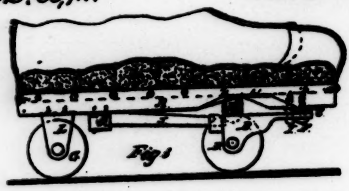
Defendants' Exhibit Hodgson

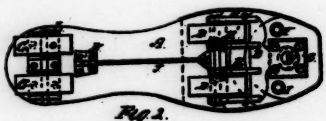
Aug. 7/11. April 6 1869 Reg

U. S. Circuit Court
District of Indiana
The Phenix Caster Co. vs. Augustus Spiegel et al

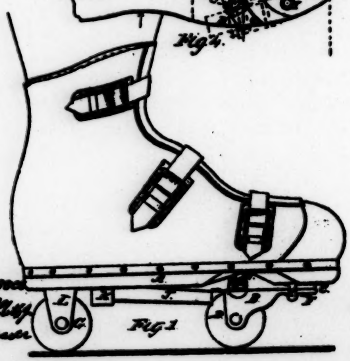
Philip Klumpp
I. Hodgson
Patentee
100

No. 88,711. Patented Apr. 6. 1869.





No. 150.
Phoenix Caster Co
vs.
Spiegel et al.
} p. 100



101 DEFENDANTS' EXHIBIT HODGSON, No. 88711, April 6, 1869. Philip Mauro, Notary.

U. S. Circuit Court, District of Indiana.

THE PHENIX CASTER CO.
vs.
AUGUSTUS SPIEGEL *et al.*

UNITED STATES PATENT OFFICE.

ISAAC HODGSON, of Indianapolis, Indiana.

Roller-Skate.

Specification forming part of Letters Patent No. 88711, dated April 6, 1869.

To all whom it may concern:

Be it known that I, Isaac Hodgson, of Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful parlor-velocipede; and I do hereby declare that the following is a full, clear, and exact description thereof, that will enable skilled artisans to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention relates principally to mode of operation of the forward wheel-frame; and it consists in the peculiar construction and manner of attaching the wheel-frame to the sole of the shoe, by which the operator is enabled at pleasure to run in a direct course, or, by the natural horizontal motion of the foot to the right or left, to change the course to a curved track without canting, rocking, or tipping the foot or sole to which the wheel-frame is attached, combined with the arrangement of a spring, which returns the wheel-frame to a direct line when the pressure upon the wheels is removed by raising the foot.

This invention further relates to construction and manner of attaching a padded shoe to the sole, by which the ordinary walking-shoe may be dispensed with, and the comfort of the wearer greatly enhanced.

(Here follows diagram marked p. 100.)

Figure 1 is a profile of my invention. Fig. 2 is an inverted view, showing the mode of attaching the wheel-frame, spring, &c., to the sole. Fig. 3 is a longitudinal vertical section, showing the pad, &c. Fig. 4 is an inverted view of the front wheels, spring, &c., showing their alternating direction.

Similar letters of reference indicate like parts in the several figures.

A represents the sole of the shoe; and B the front wheel-frame, with arm extending forward and pivoted to the plate C, which is securely attached to the sole. Directly over the axis of the wheels D the friction-rollers E, which are connected with the wheel-frame B, are set in lines radiating from the pivot F, over the friction-rollers E.

A segmental way, H, is secured to the sole A, so that when the weight of the body is thrown on the rear wheels, G, and the toes turned horizontally to the right or left, the wheel-frame B will turn on the pivot F, as indicated by red lines in Fig. 4, and enable the operator to freely move the foot on the friction-rollers E, and describe any desired curve with the foot in a horizontal position.

Stops I are secured to the sole A, to limit the sweep of the wheel-frame B. The spring J, which is attached to the sole at K and extends to the wheel-frame B, where it freely enters a slit in the frame between the wheels D, is of sufficient strength and elasticity to force the wheel-frame B from the position shown by red lines in Fig. 4 to a direct line, as shown in Fig. 2.

The rear wheel-frame, L, is secured to the sole A, so that the wheels G will always be in direct line; the pad M of the shoe to be of elastic material, of any desired thickness and elasticity to accommodate the foot.

The shoe may be of leather or canvas, lined with flannel, and securely attached to the edges of the sole, and provided with straps and buckles, for convenient and secure fastening.

I claim—

1. The wheel-frame B, provided with the forward-projecting arm, and furnished with the friction-rollers E, interposed between the frame and the sole, and attached by the arm to the forward part or toe of the sole, in the manner and for the purpose substantially as set forth.

2. The spring J, in combination with the wheel-frame B, constructed and arranged substantially as and for the purpose set forth.

ISAAC HODGSON.

Witnesses:

JOHN POLLITT, JR.
LEON BEAVER.

A is the stock or foot-board, provided at each end with the customary strap or straps, B.

At each end of the stock A a plate, C, is firmly secured, which is provided with the jaws D D′, for the shackling-hinge joint with the frame E, and is also provided with projections F F′, on which the frame G rests, to which the rollers are journalled. The projecting tenon H, which connects with the jaws D D′ by means of pin I, does not fill the jaw, and the hole *h*, in the tenon through which the pin I passes, is "countersunk." (See Fig. 2.)

The provision of the wide jaws D D′ and countersunk hole *h* permits an oscillating movement of the frame G in any direction.

The space between the projections F F′ and the space between the jaws D D′, minus the thickness of tenon H, is filled up with the rubber spring J, which fits snugly in between the stock-plate C and the bottom of the frame G. (See Fig. 1.)

This serves the purpose of preventing rattling in the joint between the frame G and plate C, and also serves to return the roller-frame to the central position after its adjustment by the body of the skater in turning curves.

The rollers K, which revolve locsely on the stationary axle L, are adjusted to turn curves, by the depression of one or the other of the projections F F′, in the natural leaning of the body of the skater, the projection F or F′ acting upon one of the inclined planes M on the frame G, and thus compelling the frame to swivel and so converge or adjust the axle of the rollers as to adapt the said rollers for describing the curve desired by the skater.

The rollers K are loose upon a single axle, L, and are separated by a loose washer, N, which is free to revolve with the rollers when both are going in one direction, and to either stand still or to revolve, as the particular location of friction may determine, when the rollers are revolving in opposite directions. By this device much friction is obviated in the ordinary movements of fancy skating.

I claim herein as new and of my invention—

The roller-frame G, provided with tenon H and inclined planes M, in the described combination with the projections F F′ and jaws D D′, the whole being constructed and operating substantially in the manner and for the purposes set forth.

In testimony of which invention I hereunto set my hand.

W. R. MORRIS.

Witnesses:

HENRY MILLWARD.
CHARLES PICKLES.

Defendant's Exhibit Lemman Patent
U. S. Circuit Court - No 103,346 - May 24. 1870
District of Indiana
The Phenix Caster Co. Philip H. Nanny Notary
vs
Augustus Spiegel et al

Roller Skate.

John Lemman.

Patented May 24 1870

104

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No. 150.
Phoenix
Caster Co.
vs
Spiegel et al
p. 104

Fig. 1.

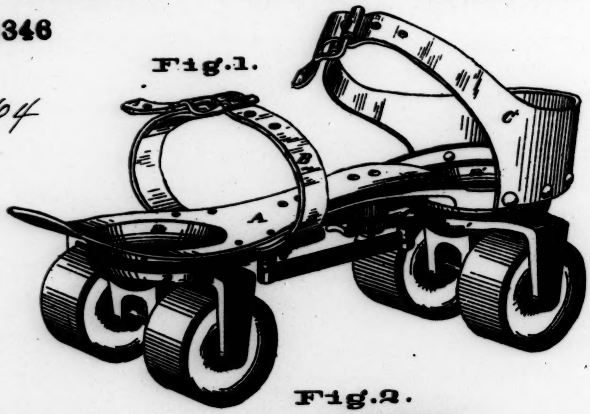


Fig. 2.

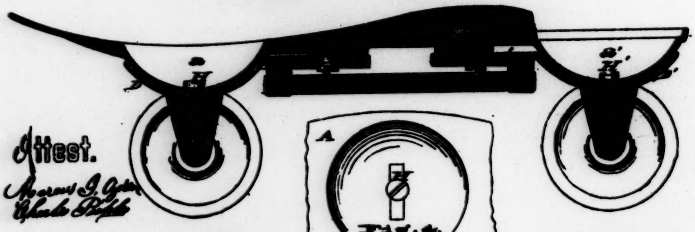


Fig. 4.

Fig. 3.

Attest.
Augustus J. Gale
Charles Bright

Inventor.
John Lemman
By H. Millward
Attorney

105 DEFENDANTS' EXHIBIT LEMMAN PATENT No. 103,346, May 24, 1870. Philip Mauro, Notary.

U. S. Circuit Court, District of Indiana.

THE PHENIX CASTER CO.
vs.
AUGUSTUS SPIEGEL *et al.*

UNITED STATES PATENT OFFICE.

JOHN LEMMAN, of Cincinnati, Ohio.

Improvement in Parlor-Skates.

Specification forming part of Letters Patent No. 103,346, dated May 24, 1870.

To all whom it may concern:

Be it known that I, John Lemman, of Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful improvements in roller-skates; and I hereby declare the following to be a sufficiently full, clear, and exact description thereof to enable one skilled in the art to which my invention appertains to make and use it, reference being had to the accompanying drawing, making part of this specification.

My invention relates to the class of broad-base roller-skates the rollers of which are adjusted to turn curves by the natural inclination of the body in skating curves; and my invention consists in the provision of ball-and-socket joints connecting the roller-frames to the stock of the skate, which device, in connection with pivoted levers attached to the sockets, enables the stock of the skate, by rolling in the sockets in obedience to the motion of the body of the skater, to so adjust the rollers as to compel them to follow the direction desired by the skater.

My invention further consists, in connection with the ball-and-socket device for the roller-frames of a flat steel spring, in connecting the two roller-frames together in such a manner that the roller-frames will be returned by the spring to the central position after being adjusted to turn or describe curves.

(Here follows diagram marked p. 104.)

In the accompanying drawing, figure 1 is a perspective view of a roller-skate embodying my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a plan of the under side of the skate, showing the position of the rollers and frames in describing curves. Fig. 4 is a top-plan view of one end of the stock.

The foot-stand or stock A of the skate is formed with downwardly-projecting spherical segments *a a'*, which are concave on the

upper side, as shown, leaving a uniform thickness of metal between the convex and concave surfaces. The stock is secured to the foot of the skater by straps B C or any other preferred method.

The rollers, which are preferably four in number, are journaled in the frame D D′, in the manner shown, in such a way as to permit of the withdrawal of the axles for lubrication.

The frames D D′ are concave on the upper side to fit over the spherical segments *a a′*, forming what is known as "ball-and-socket joints."

The frames D D′ are also formed with projecting levers *d d′*, which are loosely connected to the stock A at E E′ or F F′ by set-screw pivots G G′.

The levers *d d′* are slotted, as shown, to permit of the changing of the pivots G G′ from E E′ to F F′, in order to diminish the divergence of the levers from the center line of the stock when the stock is tilted.

The frames are connected to the stock A, at the center of the ball-and-socket joints, by set-screws H H′, the stock being slotted across, as shown in Fig. 4, to permit the lateral adjustment of the roller-frames.

A spring, I, is fitted into the slotted projections J J′ of the roller-frames, which serves to return the frames to the central position after being forced by the rolling of the stock A into position for curves. This provision is not essentially necessary, as the skate is complete without it; but it is preferred by some skaters, as it prevents "shackling."

In the operation of this skate the center of the concave of the roller-frames D D′ is in line with the center line of the stock when skating straight. When skating curves the stock A is rolled or tilted by the necessary inclination of the body for curves, and both frames D D′ are forced, by the action of the ball-and-socket joints, to the side of the skate on which the body leans. The ends of the levers *d d′* being retained by the pivots G G′ in the center line of the stock, the axles of the rollers are necessarily twisted or cramped out of right angles with the skate-stock and compelled to assume the required position for a curve, the degree of adjustment, of course, always depending upon the extent to which the body of the skater is inclined, as in other skates of this class.

It will be seen that the oscillating frames D D′ are not connected to the stock by small pintles or axles, upon which all the strain is sustained, as in other skates with tilting foot-boards, but the connection is broad and solid, with the best known form for wearing surface—viz., ball and socket.

Claims.

1. In connection with the stock A, provided with spherical segments *a a′* and pivots G G′, the concave roller-frames D D′ *d d′*, combined, arranged, and operating substantially in the manner and for the purpose specified.

2. In connection with the oscillating roller-frames D D′ J J′, the

Defendants Exhibit Fenton. Patent

U. S. Circuit Court- No 122 376 Jan. 2 1872
District of Indiana
The Phenix Caster Co
vs. Augustus Spiegel et al

(143.) JOHN H. FENTON. 106

Improvement in Roller Skates.

No. 122,376. Patented Jan. 2, 1872.

Fig. 1.

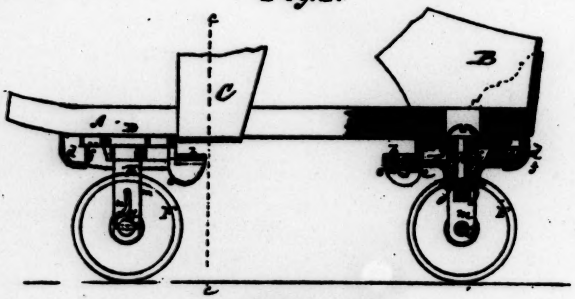
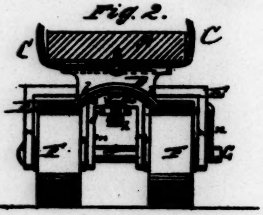


Fig. 2.



No. 150. Thomas Castle & Spiegel et al. } A. 106

Fig. 3.

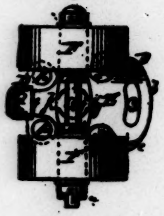


Fig. 4.

Witnesses:

E. Wolff

Francis McArdle

Inventor:

J. H. Fenton.

Per Munn & Co

Attorneys.

provision of the spring I, connected and operating in the manner and for the purpose described.

In testimony of which invention I hereunto set my hand.

JOHN LEMMAN.

Witnesses:

FRANK MILLWARD.
EZRA COPE.

106

122,376.

UNITED STATES PATENT OFFICE.

JOHN H. FENTON, of Indianapolis, Indiana.

Improvement in Roller-Skates.

Specification forming part of Letters Patent No. 122,376, dated January 2, 1872.

Specification describing a certain improved roller-skate invented by John H. Fenton, of Indianapolis, in the county of Marion and State of Indiana:

This invention relates to a new construction and arrangement of devices whereby wheels or rollers are attached to the foot-support of a skate in such a manner as to enable the performer to execute all of the varied evolutions of skating on a smooth floor by the same or a similar motion of the body as that employed in propelling the skater on ice.

In the accompanying drawing,

(Here follows diagram marked page 106*a*.)

figure 1 is a side elevation, partly in section, of my improved roller-skate. Fig. 2 is a vertical transverse section of the same, the line *c c*, Fig. 1, indicating the plane of section. Fig. 3 is a bottom view of the roller-frame or hanger. Fig. 4 is a bottom view of the saddle-plate.

Similar letters of reference indicate corresponding parts.

A in the drawing represents the foot-support of the skate. B is the heel-strap and brass plate; C, the toe-strap; all these parts being of suitable kind and style. To the under side of the foot-support is attached, by screws *a a*, the saddle-plate D, comprising the segmental concave bearing *b* and a socket, *d*. E is the roller-frame or hanger, comprising the segmental convex bearing *e* and the projecting pivot *f*, which correspond respectively with and work in the concave bearing *b* and socket *d*. The convex bearing *e* on the hanger-frame is slotted, and through the slot passes a pintle, *g*, that projects downward from the concave plate *b* of the saddle and guides the movable hanger-frame in a regular direction; also serving as a check in preventing the bearing *e* from traveling too far. *h* is a screw which passes through the foot-support and the saddle-

plate, its head resting on the top of the latter; also through a rubber cushion, *i*, and the roller-frame E, and is secured at the bottom by a nut, *j*. This nut is provided with projecting pins or trunnions *l l*, which rest in corresponding grooves in the under side of the hanger, which, when it vibrates on its pivot *f*, will rock also on said trunnions of the nut and thus have the necessary freedom of motion. F F are the wheels or rollers, hung on an axle, G, which is secured in projecting ears *m m* of the hanger. *n* is a hooked wire which holds the axle G in place, preventing longitudinal displacement by passing through a hole in the end of the same. This wire is secured at its upper part by passing through an ear or leg, *m*, of the hanger E, and being bent downward on the inside thereof, as shown in Fig. 2. Its lower end is passed through the axle. Being suspended in a line beyond the center of the axle G, the wire is retained in its proper place by its greater weight at the lower end, compelling it always to seek a perpendicular, thus effecting a very neat, cheap, and secure fastening for the axle. The rubber cushion *i* is interposed between the hanger-frame and saddle, being let into a cavity or box of the hanger, as shown in Fig. 1. It yields to the side pressure of said box, and, acting in its natural manner, returns the hanger to its original position when the pressure is removed.

Having thus described my invention, what I claim as new, and desire to secure by letters patent, is—

1. The saddle-plate D, having the concave segmental bearing *b*, pintle *g*, and socket *d*, substantially as herein shown and described.

2. The wheel-frame or hanger F, slotted, and provided with the convex segmental bearing *e*, pivot *f*, and rubber cushion *i*, substantially as and for the purpose herein shown and described.

JOHN H. FENTON.

Witnesses:
JOHN FENTON.
J. G. LIGHTFORD.

108 126,433.

UNITED STATES PATENT OFFICE.

ALONZO C. ARNOLD and OTTO G. HANSCHILDT, of Norwalk, Connecticut.

Improvement in Furniture-Casters.

Specification forming part of Letters Patent No. 126,433, dated May 7, 1872.

Specification.

To all whom it may concern:

Be it known that we, Alonzo C. Arnold and Otto G. Hanschildt, of Norwalk, in the county of Fairfield and State of Connecticut,

ARNOLD & HANSCHILDT.

107

Improvement in Furniture-Casters.

No. 126,433. Patented May 7, 1872.

Fig 1.

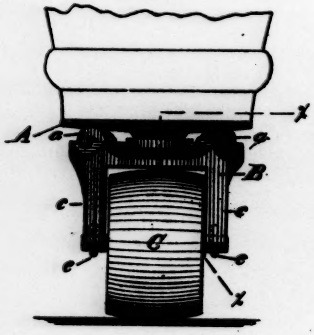
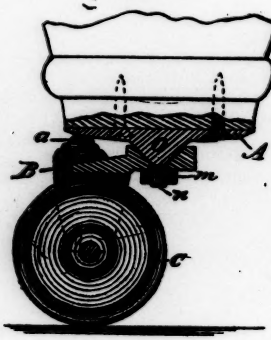


Fig 2.



No. 150. Phoenix Caster Co. } p. 107

Fig 3.

Fig 4.

Witnesses.

Harry King.
Phil. F. Dodge

Inventors.

Alonzo C. Arnold &
Otto G. Hanschildt.
by Edgecomb Nunn
Attys.

have invented certain improvements in furniture-casters, of which the following is a specification, reference being had to the accompanying drawing.

(Here follows diagram marked p. 107.)

Our invention relates to an improvement in furniture-casters; and the invention consists in so constructing and casting the various parts that they can be fitted together with less labor and fitting than heretofore, and so that when the parts are once in position they will be retained there, all as hereinafter more fully explained.

Figure 1 is a rear elevation of the caster complete. Fig. 2 is a vertical section on the line *x x* of Fig. 2. Figs. 3 and 4 are views of portions detached.

This invention relates to that class of casters in which friction-rollers are mounted in the frame that holds the wheel; and it has for its object the simplifying and cheapening of their construction.

In constructing our improved caster we provide a circular plate, A, which is provided with screw-holes for securing it to the furniture in the usual manner, this plate having its under side slightly beveled around its outer edge, as shown in Fig. 2. This plate also has at its center a conical hub or projecting stud, O, the lower end of which is made straight, and has a screw-thread cut thereon to receive a nut, *m*, as shown in Fig. 2. If desired, this straight part *n* of the conical hub O may be made of wrought iron, and set in the mold and the plate cast on it. We then make a frame, B, the form of which is clearly shown in Figs. 1, 2, and 3, the latter representing it detached. The horizontal or top portion of this frame is provided with a conical hole, *f*, to form a seat or bearing for the conical hub O; and near its outer edges it is also provided with two recesses, *h*, as shown in Fig. 3. On each side of these recesses semicircular grooves are formed to afford the bearings for the journals of small friction-rollers *a*, which are to be set in said recesses. This frame B has its depending arms or legs *c* formed with semicircular grooves *r* in their lower ends; and on one side of each groove a small piece of wire, *e*, is secured by casting the metal of the frame on the wire, as shown in Fig. 3. We then make for each caster two small friction-rollers, *a*, the body of which is beveled to correspond with the beveled edge of the plate A, and which are cast with their journals all complete, as represented in Fig. 4, they being of the proper size to fit in the recesses *h*, with their journals resting in the grooves at the sides thereof. We then provide a wheel, C, of proper size to fit between the arms *c*, and which is also cast with its journals complete and of proper size to fit in the bearings *r*. This wheel C is then placed in position, and secured there by bending the wire *e* at each side around the journal of the wheel, as represented by the dotted lines in Figs. 2 and 3. The friction-rollers *a* are then set in their recesses, and the plate A applied and secured by the nut *m*, as represented in Fig. 2, when the caster is complete.

It will thus be seen that all the parts may be cast complete, and the parts put together without the drilling of the wheel, the rollers,

or the bearings, as has heretofore been the custom; and that when the plate A and the frame B are united, the friction-rollers will be held in place and prevented from becoming detached.

Having described our invention, what we claim is—

1. A caster consisting of the plate A, provided with a conical hub, O, having a screw-stem cast therein, with the frame B, provided with a corresponding bearing, *f*, all constructed and arranged to operate substantially as described.

2. The frame B, provided with the recesses *h*, having the friction-rollers *a* set loosely therein, in combination with the plate A, whereby the said rollers can be cast with their journals complete, and be held in place without the use of any additional parts, as set forth.

ALONZO C. ARNOLD.
OTTO G. HANSCHILDT.

Witnesses:
JOSEPH F. FOOTE.
CHAS. ADAMS.

109 UNITED STATES PATENT OFFICE.

JOHN PARRY, of Manchester, Great Britain.

Improvement in Furniture-Casters.

Specification forming part of Letters Patent No. 135,286, dated January 28, 1873.

To all whom it may concern:

Be it known that I, John Parry, of Manchester, in the county of Lancaster, Kingdom of Great Britain and Ireland, have invented improvements in furniture-casters, of which the following is a specification.

My invention relates to casters in which the pivoted bracket carrying the caster-wheel also carries a friction-wheel, arranged to bear against the under side of a disk or plate on the socket, and forming part of the caster; and my invention consists in substituting for the friction-wheel a grooved wheel or roller adapted to an annular rib on the socket, thereby relieving the pivot or central pin from the lateral strains to which it would otherwise be subjected.

In the drawing,

(Here follows diagram marked p. 109*a*)

which illustrates several modes of carrying my invention into effect, *b* represents the bracket turning on the pin *c* and carrying the roller or caster-wheel *d*. Across a slotted projection, *e*, of the bracket *b* extends the pin of a grooved wheel or pulley, *f*, adapted to an annular rib, *g*, on the socket *a*.

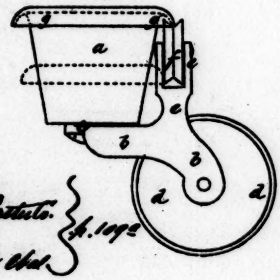
It will be seen that the rib extending into the groove of the wheel relieves the central pivot of all lateral strain.

J. PARRY. 1092

Furniture-Casters.

No. 135,286. Patented Jan. 28, 1873.

FIG. 1.



No. 150.
Hornig Castors.
vs.
No. 1092
Spiegel et al

FIG. 2.

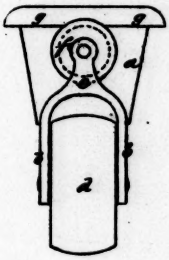


FIG. 3.

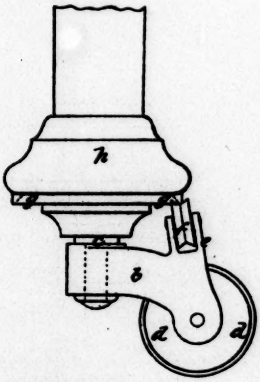
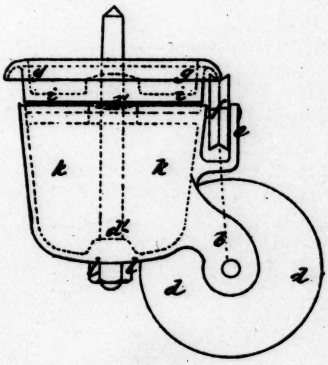


FIG. 4.



Witnesses
Geo. Hughes
A. Wilson

John Parry

Defendants' Exhibit. Parry
No. 35, 286, Jan. 28. 1878
U. S. Circuit Court Philip Adams
District of Indiana Atty
The Phenix Caster Co
vs.
Augustus Spiegel et al

Defendant's Exhibit · Dodge Patent
No 136.711, March 11. 1873
Philip Schaum
Notary.

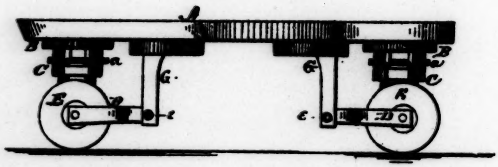
U. S. Circuit Court
District of Indiana
The Phenix Coaster Co
vs.
Augustus Spiegel et al

O. H. DODGE. 110a

Roller Skates.

No. 136,711. Patented March 11, 1873.

Fig 1



No. 150. Phoenix Castors & Skirgel sta } h. 110a

Fig 4

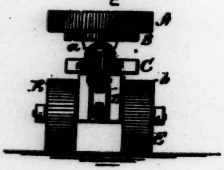
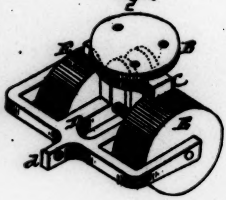


Fig 5

Fig 3

Fig 2



Witness:
Francis C. Durand
C. L. Everett.

Inventor.
Oliver H. Dodge.
per
Alexander Mason
Attorneys.

If desired, the pulley *f* may be placed at an angle, as shown in Figs. 1 and 3, so as to receive the thrust more directly.

Claim.

The combination, in a caster, of a grooved wheel on the bracket and an annular rib on the socket, adapted to the wheel, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN PARRY.

Witnesses:

JNO. HUGHES.
W. H. WALKER.

110 UNITED STATES PATENT OFFICE.

OLIVER H. DODGE, of Jackson, Tennessee.

Improvement in Roller-Skates.

Specification forming part of Letters Patent No. 136,711, dated March 11, 1873.

To all whom it may concern:

Be it known that I, Oliver H. Dodge, of Jackson, in the county of Madison and in the State of Tennessee, have invented certain new and useful improvements in circular-running roller-skates; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists in the construction and arrangement of the running-gear of circular-running-roller-skates so as to turn the shortest curve without the use of springs or other unreliable fastenings for the trucks.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing,

(Here follows diagram marked p. 110*a*.)

in which—

Figure 1 is a side elevation of my skate. Fig. 2 is a perspective view of one of the trucks. Fig. 3 is a perspective view of a guide-post attached to the under side of the foot-board. Fig. 4 is an end view, and Fig. 5 a vertical section, of one of the trucks.

A represents the foot-board or plate to which the foot is strapped. This foot-board or plate rests upon two rocking bolsters, B B, attached to its under side—one at the toe and the other at the heel. To each of these rocking bolsters is hinged, by means of a pin, *a*, the

swinging bolster, C, and to the under side of each swinging bolster is fastened the truck-frame D by means of a single screw, *b*, passing loosely through the bolster and screwed into the center of the truck-frame. In each frame D are mounted two rollers, E E. G G represent two guide-posts attached to the under side of the foot-board A—one in rear of the front truck, and the other in front of the rear truck. These posts drop low enough to receive, in a slot formed in the lower end of each, a projecting tongue, *d*, from the respective truck-frames. These tongues project, one from the rear of the front truck-frame and the other from the front of the rear frame, and are secured in the slots of their respective guide-posts by a loose-fitting pin, *e*.

By this means the axes of the rollers are forced, by simply rocking the foot, to an angle corresponding with the incline of the foot, the front rollers being turned toward the side the foot is inclined to, and the rear rollers toward the opposite side.

Having thus fully described my invention, what I claim as new, and desire to secure by letters patent, is—

The combination, with the foot-pad A, of the rocking bolster B, pin *a*, swinging bolster C, screw *b*, rollers E E, and truck D, with projecting tongue *d* hinged by the pin *e* in the bifurcated and beveled end of the post G, all substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of November, 1872.

OLIVER H. DODGE.

Witnesses:

J. R. CHAPPELL.
L. T. LINDSEY.

112 UNITED STATES PATENT OFFICE.

HENRY NETZ, of Brooklyn, E. D., New York.

Improvement in Furniture-Casters.

Specification forming part of Letters Patent No. 149,782, dated April 14, 1874; application filed March 13, 1874.

To all whom it may concern:

Be it known that I, Henry Netz, of Brooklyn, E. D., in the county of Kings and State of New York, have invented a new and useful improvement in furniture-casters; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

(Here follows diagram marked p. 111.)

H. NETZ.

Furniture-Castors.

111

No. 149,782.

Patented April 14, 1874

Fig. 1

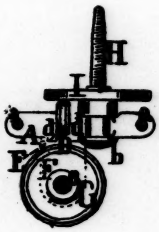
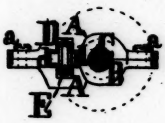


Fig. 2.



No 150.
Phoenix
Caster Co.
v
Spiegel Ekl
h. 111

Fig. 3.

Witnesses.

Ernst Bilhuber

Henry Gerdner

Inventor.

Henry Netz

by

Van Santvoord & Hopkins

Attys

swinging bolster, C, and to the under side of each swinging bolster is fastened the truck-frame D by means of a single screw, *b*, passing loosely through the bolster and screwed into the center of the truck-frame. In each frame D are mounted two rollers, E E. G G represent two guide-posts attached to the under side of the foot-board A—one in rear of the front truck, and the other in front of the rear truck. These posts drop low enough to receive, in a slot formed in the lower end of each, a projecting tongue, *d*, from the respective truck-frames. These tongues project, one from the rear of the front truck-frame and the other from the front of the rear frame, and are secured in the slots of their respective guide-posts by a loose-fitting pin, *e*.

By this means the axes of the rollers are forced, by simply rocking the foot, to an angle corresponding with the incline of the foot, the front rollers being turned toward the side the foot is inclined to, and the rear rollers toward the opposite side.

Having thus fully described my invention, what I claim as new, and desire to secure by letters patent, is—

The combination, with the foot-pad A, of the rocking bolster B, pin *a*, swinging bolster C, screw *b*, rollers E E, and truck D, with projecting tongue *d* hinged by the pin *e* in the bifurcated and beveled end of the post G, all substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of November, 1872.

OLIVER H. DODGE.

Witnesses:

J. R. CHAPPELL.
L. T. LINDSEY.

112 UNITED STATES PATENT OFFICE.

HENRY NETZ, of Brooklyn, E. D., New York.

Improvement in Furniture-Casters.

Specification forming part of Letters Patent No. 149,782, dated April 14, 1874; application filed March 13, 1874.

To all whom it may concern:

Be it known that I, Henry Netz, of Brooklyn, E. D., in the county of Kings and State of New York, have invented a new and useful improvement in furniture-casters; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

(Here follows diagram marked p. 111.)

H. NETZ.

Furniture-Castors.

111

No. 149,782.

Patented April 14, 1874

Fig. 1

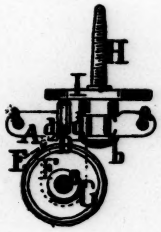
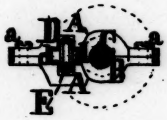


Fig. 2.



No. 150.
Phoenix Castor Co.
to
Spiegel & Ebel

h. 111

Fig. 3.

Witnesses.

Ernst Reithuber

Henry Gerstner

Inventor.

Henry Netz

by Van Santvoord & Hopkins

Attys

Figure 1 shows a vertical central section of this invention. Fig. 2 is a sectional plan or top view thereof. Fig. 3 is a transverse vertical section of the same.

Similar letters indicate corresponding parts.

This invention relates to furniture-casters, and consists in a caster, the frame of which is made in two halves or sections attached together by screws or rivets, between which is the caster-wheel and an auxiliary friction-roller, situated above said caster-wheel, which forms the bearing for a disk attached to the socket-piece of the caster, which socket-piece is mounted between the two halves of the aforesaid frame, in such a manner that a caster is obtained, all the parts of which are easily placed or adjusted in position, and furthermore can be entirely finished before being adjusted in position in the caster.

In the drawing, the letters A A′ designate the two halves or sections of the frame of my caster, which are held together at each end by means of screws *a a* or other suitable fastening devices, and may be of cast or struck-up metal as most convenient. This frame is provided with a segmental portion, B, to receive and hold the pintle C of the socket-piece of the caster, said pintle being provided with a head, *b*, which catches under the edge of the frame. Said frame A A′ is provided also with a socket, D, to receive an auxiliary friction-roller, E, the gudgeons *d d* of which are supported on shoulders sunken or formed on the upper and opposite edges of said socket D. On the sides of the frame A A′ are brackets F F or the horn of the caster, between which rotates the caster-wheel G, this being mounted on a pin or bolt, *e*, in the usual manner. Below the screw-stem H of the socket-piece is a disk, I, which bears upon the auxiliary friction-roller E, and when the caster is shifted turns thereon, serving to reduce friction, and thereby ease the movement of the caster.

It will be seen that if a single part of my caster becomes worn or broken, it can be taken out and replaced with facility and without detriment to the remaining parts, whereby my caster is rendered comparatively cheap and of advantage over most of those heretofore made.

I am aware that it is not broadly new to construct the caster-frame in sections or halves, but such feature of itself is not claimed by me.

What I claim as new, and desire to secure by letters patent, is—

The caster-frame, made in two halves or sections, A A′, attached together by screws or rivets *a a*, provided with a caster-wheel, G, and with an auxiliary friction-roller, E, which forms the bearing for a disk, I, attached to the socket-piece of the caster, substantially as hereinbefore set forth.

This specification signed by me this 5th day of March, 1874.

HENRY NETZ.

Witnesses:

W. HAUFF.
E. F. KASTENHUBER.

113 UNITED STATES PATENT OFFICE.

JOHN E. BUCKINGHAM, of Washington, District of Columbia.

Improvement in Casters.

Specification forming part of Letters Patent No. 150,132, dated April 28, 1874; application filed September 20, 1873.

To all whom it may concern:

Be it known that I, John E. Buckingham, of Washington, in the county of Washington and District of Columbia, have invented certain new and useful improvements in casters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

(Here follows diagram marked page 113*a*.)

My invention relates to certain improvements in furniture-casters.

In the drawings, Figure 1 represents a sectional side view of the caster applied to the leg of a piece of furniture; Fig. 2, a vertical transverse section of same, detached; Fig. 3, a plan view; Fig. 4, a transverse section of the ground-rollers.

My invention consists in a peculiarly-recessed shank, with anti-friction rollers inclosed therein, and turning in trunnion-seats made in its interior and exterior walls, the rollers situated upon that side of the recess that is adjacent to the caster-roller, in combination with other parts.

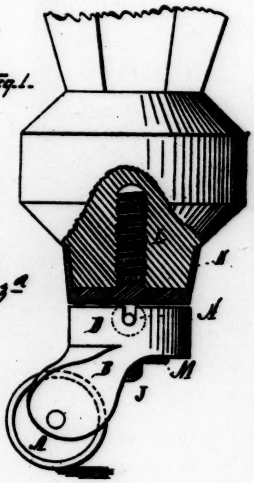
A represents the ground-roller, secured in the usual manner in a projecting shank, B, by an axle, C. In the cylindrical top D of the shank B is a recess, E, cored out between an interior rim, F, and an exterior rim, G. These rims form the bearings or trunnion-seats for the rollers H, of which there are three—one situated above the roller or rollers A, and one situated on each side of the shank B; and it will be observed that they are all upon that side of the annular recess that is adjacent to the projecting foot B or roller A. Through the center of the cylindrical top D is a cylindrical hole, through which passes the stem J of the leg attachment K. This leg attachment may either be a plate, Fig. 2, or a ferrule, Fig. 1. Extending above the cylindrical stem J is a screw, L, which screws up into the end of the furniture-leg. Through the plate and ferrule are screw-holes, as additional means for securing the same to the legs. For the purpose of holding the shank B to the stem J, I propose to employ a spring-pin, M.

By the above-described arrangement a cheap, simple, and effective caster is obtained; the bearing-rollers, being inclosed in a recess and covered, are protected from any accumulation of dust in sweeping.

J. E. BUCKINGHAM. 113
Casters.

No. 150,132. Patented April 28, 1874.

Fig. 1.



No. 150.
Phoenix Caster Co.
Pl. 113
Spiegel del.

Fig. 2.

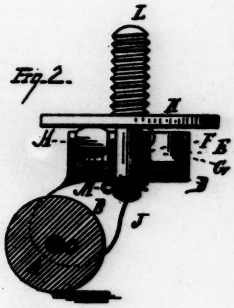


Fig. 3.

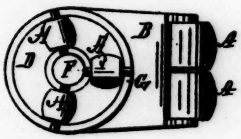


Fig. 4.

WITNESSES.
H. T. Newman.
Wm. H. Burton Jr.

INVENTOR.
John E. Buckingham.
By Leggett & Leggett
Attorneys.

Defendant's Exhibit. Buckingham Patent
No 100,132. April 28, 1874

U.S. Circuit Court
District of Indiana
The Phenix Coaster Co
vs
Augustus Spiegel et al

Philip Maurer
Notary.

Having thus described my invention, what I claim as new and desire to secure by letters patent is—

The furniture-caster composed of the foot B, provided in its upper end with the annular recess E, the said recess provided on that side adjacent to the caster roller or rollers A with the bearing-rollers H H H, suspended in trunnion-seats formed in the exterior and interior walls F G of the recess E, the whole combined with the fastenings J K L, all constructed, arranged, and operating substantially as and for the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand this 18th day of September, 1873.

JOHN E. BUCKINGHAM.

Witnesses:

GEORGE W. SHEFFIELD.
WM. C. NOLEN.

114 UNITED STATES PATENT OFFICE.

LA FAYETTE BLAIR, of Painesville, Ohio.

Improvement in Fifth-Wheels for Vehicles.

Specification forming part of Letters Patent No. 159,492, dated February 9, 1875; application filed October 30, 1874.

To all whom it may concern:

Be it known that I, La Fayette Blair, of Painesville, county of Lake and State of Ohio, have invented a new and improved fifth-wheel for vehicles; and declare the following to be such a full, clear, and exact description thereof as will enable others skilled in the art to which my invention relates to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in fifth-wheels, whereby they may be made in a simple and durable form, and at the same time very light and of little expense; and consists, first, in securing to the axle the lower segment of a spherical joint, and to the reach the upper segment of same, the two being united by a king-bolt starting from a point above the axle, and extending up through both said segments, the head-block, and the lower leaves of the spring; second, in improvements in detached portions of the mechanism, whereby the above construction is made practicable and efficient; third, in the combination with the upper segment of the spherical joint and the king-bolt of the lower segment attached rigidly to the axle, and a slot in the said lower section through which the bolt passes, the said slot being elongated in the direction parallel to the axle, but not otherwise; fourth, in the combination with the reach-

box and the plate beneath the axle of a brace attached rigidly to the said plate and hinged to the reach-box.

In the drawings,

(Here follows diagram marked p. 114*a*.)

figure 1 is a front elevation of my invention. Fig. 2 is a vertical cross-section through the center line of the axle at *x y*, Fig. 1. Fig. 3 is a detached view of the king-bolt.

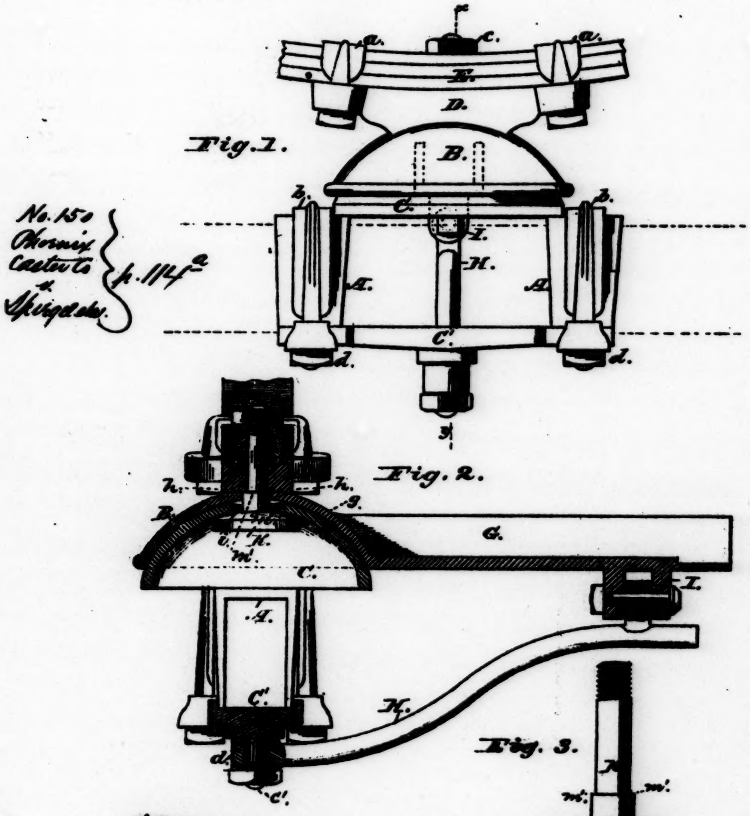
A is a box or casing extending down and around the axle. C′ is a metallic plate, provided with a central stud or bolt, *c′*, and bolt-holes for the passage of the bolt ends of the clips *b*. The parts are finally securely bound together by the nuts *d*. C is a top cast solid with the box A. It is in the form of a segment of a hollow sphere, and is made smooth on its inner and outer surface. It is provided with a slot, *i*, at the top for the passage of the king-bolt. This slot is elongated in the direction of the length of the axle, so as to admit of the king-bolt moving in that direction. B is a cap-plate made to fit down over the seat or spherical top or bearing C, and it is also in form the segment of a hollow sphere on its under side, though its upper side may be of any desired shape. G is a box for holding, or to which may be attached, the reach. It is cast with and forms a part of the cap-plate B. Its edges project above the top of the cap-plate B, at *g*, and form a shoulder, against which the head-block rests, and prevent it from turning. D is the head-block, suited on its under side to rest immovably upon the cap-plate B, and on its upper side to receive the spring E and the clips *a*, whereby the spring is secured to the head-block. K is a king-bolt. It is formed with a head, *m*, that has a spherical bearing on its upper side to conform to the under side of the bearing C. Its shaft passes up through the slot *i*, the cap-plate B, head-block D, and spring E, and is there secured by the nut *c*. The king-bolt is of peculiar construction. It is formed with a shoulder, *m′*, between the two plates B and C, and the head-block D is formed with a bushing or annular shoulder, *h*, which projects down through the cap B, and rests squarely against the shoulder *m′* on the king-bolt. This prevents the lower end or head, *m*, of the king-bolt from being clamped by the nut *c* so closely against the bearing C as to prevent a free motion, and at the same time, should wear eventually cause looseness or lost motion, it can be readily compensated by removing the king-bolt and filing down on the shoulder *m′*. The sleeve or bushing *h* also serves another purpose: it makes a broad bearing on the bolt, so that should a person bear down upon one side of the carriage, as in entering the same, the leverage obtained on the king-bolt would cause it to bind firmly against the lower shell or bearing, C, causing it to bind against the cap B, and consequently holding the parts rigidly, so that the carriage will only yield by its springs, and not at this joint.

It is obvious, that instead of making the reach-connection in the form of a box it may be made flat and be connected with the reach in any suitable manner; so also it is not absolutely essential, though preferable, that it should be cast solid with the cap B, for it might

La F. BLAIR. 114a

Fifth-Wheel for Vehicles.

No. 159,492. Patented Feb. 9, 1875



Witnesses:
William Pettingell.
Charles H. Pettingell.

Inventor.
La Fayette Blair.

Defendant's Exhibit Bauer Patent

No. 159,492. Feb. 9, 1875

U S Circuit Court
District of Indiana
The Sherrix Cooler Co.
vs.
Augustus Spiegel et al

Philip Sharp
Notary.

be otherwise rigidly secured thereto. On the bar C′ is a stud or bolt, *c*′, to which the end of the brace H is rigidly secured. The other end of the brace is hinged, as shown at I, to the reach-box, so as to permit the brace attachment to conform to the relative positions of the axle and the reach.

It is obvious that the foundation or base of the bearing-plate C may not be formed into the shape of a box, A, to embrace the axle; but the plate C may be secured to the axle in any suitable manner.

It will be noticed that the joint is not exactly a ball-and-socket joint; but the surfaces are but small segments of spheres, and are all separated by simply removing the nut *c* from the king-bolt K.

It is also obvious, that instead of dressing the head of the king-bolt to a spherical surface it might be an ordinary bolt, and the spherical surface be formed on a washer, through which the bolt might pass.

What I claim as new, and desire to secure by letters patent, is—

1. The plate or bearing C, provided with inner and outer spherical surfaces and means for attachment to the axle, substantially as and for the purposes described.

2. The combination, with the plate C, of the king-bolt K and the elongated slot *i*, substantially as and for the purposes described.

3. The combination, with the plate C, of the box A, substantially as and for the purposes described.

4. The combination, with the plate C and box A, of the plate C′ and clips *b*, substantially as and for the purposes described.

5. The combination, with a hollow spherical bearing-plate C, of the spherical cap-plate B and king-bolt K, the said king-bolt starting from the under side of the plate C, substantially as and for the purposes described.

6. The combination, with the spherical cap B, of the reach-box G, substantially as and for the purposes described.

7. The combination, with the plate C′ and the reach-box G, of the brace H, attached rigidly to the said plate and hinged to the reach-box, substantially as and for the purposes set forth.

8. The combination, with the plates C and B and king-bolt K, of the head-block D and shoulder *h*, substantially as and for the purpose described.

9. The combination, with the plates C and B, head-block D, and spring E, of the king-bolt K, starting from the under side of the plate E, and the nut *c*, as set forth.

10. The combination of box A, plates C and B, reach-box G, head-block D, king-bolt K, and elongated slot *i*, substantially as and for the purposes described.

LA FAYETTE BLAIR.

Witnesses:

WILLIAM PETTINGELL.

CHARLES H. PETTINGELL.

115 UNITED STATES PATENT OFFICE.

CYRUS W. SALADEE, of Washington, District of Columbia.

Improvement in Parlor-Skates.

Specification forming part of Letters Patent No. 177,567, dated May 16, 1876; application filed April 28, 1876.

To all whom it may concern:

Be it known that I, Cyrus W. Saladee, of Washington city, in the District of Columbia, have invented certain improvements in parlor-skates, of which the following is a specification.

To enable others skilled in the art to make and use my invention, I herewith submit the following description:

A skate constructed with rollers that cramp, by attaching or applying the same to the stock or foot-stand in such manner that said rollers will be "turned," "cramped," or "adjusted" so as to run the skate in a curved line to the right or left, by turning, rocking, canting, or oscillating the stock or foot-stand upon a jointed intermediate mechanism connecting the stock to the running-gear of the skate, is no part of my invention.

My invention consists, first, in the attachment of a heel-support pivoted to the stock or foot-stand of a parlor-skate, and otherwise suitably connected to the axle or gearing below, in such manner that a rocking or oscillating motion is imparted to the heel-support by a slight pressure of the heel of the skater's boot to one side or the other, thereby directing the rollers to run the skate in curved lines to the right or left, while the stock or foot-stand remains in its fixed lateral or horizontal position paralled with the floor; also, securing to the rear axle a steering-bar, which is acted upon by a swinging standard suspended from the overlying heel-support, by which the rocking motion imparted to the latter causes the axle to be turned upon its center-pin and the skate directed in curved lines to the right or left, as already described; also, applying to the oscillating heel-support the requisite fastening to secure the heel of the boot thereon, thereby leaving the instep of the foot free to move laterally on either side of the center line of the stock or foot-stand when running the skate in curved lines.

In the drawings,

(Here follows diagram marked p. 115*a*.)

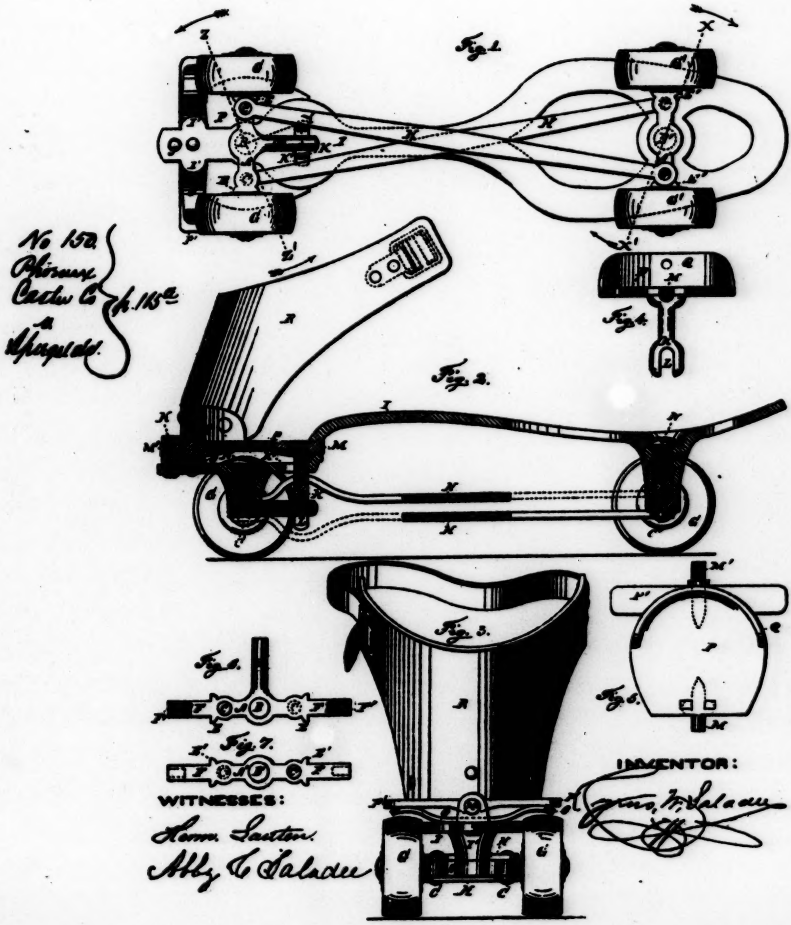
figure 1 is a bottom-plan view of a skate embodying my invention. Fig. 2 is a vertical longitudinal section of the same. Fig 3 is a rear view. Fig. 4 is a detached front view of the oscillating heel-support. Fig. 5 is a top view of the same. Fig. 6 is a detached top view of the rear axle and steering-bar combined, and Fig. 7 is a detached top view of the front axle.

In this skate I construct the stock or foot-stand I and the sockets

C. W. SALADEE. 115 a

PARLOR-SKATES.

No. 177,567 Patented May 16, 1876.



WITNESSES:

Henry Lawton

Abby C. Saladee

INVENTOR:

Chas. W. Saladee

Defendants Exhibit Schlader Patent

No. 177,562 - May 16, 1876

U. S. Circuit Court
District of Indiana
The Phenix Caster Co.
vs
Augustus Spiegel et al

Philip Klumpp
Notary.

I′ by casting the same in one piece of metal, the top of the foot-stand being pierced and made skeleton in shape. The front axle A′ has its center-pin B′ formed upon its upper surface, which pin is fitted to operate in its corresponding socket formed upon the bottom of the foot-stand. The front rollers G′ are secured upon the axle-spindles F. The rear axle A has, in like manner, its center-pin B formed upon its upper surface, with the steering-bar D secured to the front side, in a position at right angles to the center-pin. The center-pin is secured in its corresponding socket I′, as clearly shown in Fig. 2. The oscillating heel-support P has a narrow rim, Q, raised upon its rear edge the better to support the heel of the boot, and also as a means to secure the leather fastening R, for the support of the heel and instep of the foot. To the front edge of the heel-support P is secured the swinging standard K, the lower end of which is forked. The prongs of this fork pass down over the steering-bar D, as seen in Figs. 1 and 2; or the swinging standard K may be shaped like D, and work in a slot formed in the steering-bar D. The heel-support P is pivoted to the stock I at M and M′. The leather fastening R is riveted to the outside of the raised rim Q. The front and rear axles are connected by the diagonally-arranged equalizing-bars H and H′.

Supposing the skate to be in position on the foot of the skater, its operation is as follows, viz: The stock I and the front part of the foot remain in their fixed lateral or horizontal position, parallel with the floor, while the heel, by a slight pressure, on one side or the other, upon the heel-support P, will depress that side, and thus produce a rocking or oscillating motion on its pivoted centers M M′. By such motion the lower end of the swinging standard K will be swung in the opposite direction, carrying with it the front end of the steering-bar D, thereby throwing the hind axle into the position shown by the dotted line Z Z′. In taking this position a corresponding motion is instantly transmitted to the front axle through the diagonally-arranged bars H H′. The axles of the rollers thus take a position radial to the curve which it is desired the skate should take.

I do not here claim the diagonal bars H and H′, they forming the subject of another pending application of mine.

I have described the stock or foot-stand I as being cast, and as having the sockets I′ formed thereupon as part of the same. But with a view of making the complete skate as light as possible, the stock may, by appropriate dies and drops, be punched out and struck up of sheet metal, and the sockets I′ riveted thereto, as shown and described in another application of mine; and, if preferred, the usual wood stock may be used, and the heel-support hinged thereto by piercing a slot through it at the point where the swing-standard K passes down to connect with the steering-bar, and which will answer the purpose in the cheaper class of skates I intend manufacturing.

I claim—

1. In a parlor-skate, the rocking heel-plate P, in combination with the swinging axle A, and mechanism by which the oscillation

of said heel-plate will turn said axle, substantially as and for the purpose set forth.

2. In a parlor-skate, the steering-bar D, in combination with the rear axle, the swinging standard K, and the oscillating heel-support P, substantially as and for the purpose herein set forth.

3. In a parlor-skate, the oscillating heel-support P, in combination with a suitable fastening to secure it to the foot, substantially as herein set forth.

CYRUS W. SALADEE.

Witnesses:
J. A. RUTHERFORD.
J. WEST WAGNER.

116 UNITED STATES PATENT OFFICE.

ROBERT GIBSON, of New York, N. Y.

Improvement in Roller-Skates.

Specification forming part of Letters Patent No. 189,451, dated April 10, 1877; application filed March 24, 1877.

To all whom it may concern:

Be it known that I, Robert Gibson, of the city, county, and State of New York, have invented a new and useful improvement in roller-skates, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a longitudinal vertical section. Fig. 2 is an inverted plan, partly in section.

Similar letters indicate corresponding parts.

This invention consists in the combination of a vertical swivel standard and of a regulator with the roller frame or truck, and with the foot-plate of a roller-skate, said roller-frame being provided with a pin which projects through a hole in the regulator, so that by bringing the weight of the body to bear on one side of the foot-plate the roller-frame is caused to adjust itself in an oblique position, and the skate describes a curve, while at the same time the roller-frame is prevented by the regulator from swiveling clear round or from assuming an impracticable or dangerous position. The connection between the standard of the roller-frame and the foot-plate is effected by a ball-and-socket joint, which allows said roller-frame to assume a compound motion in relation to the foot-plate, whereby the operation of describing a curve is facilitated. With the swivel-standard of the roller-frame, and with the socket which forms the bearing for said swivel-standard, is combined an elastic packing for preventing said standard from wearing against the edges of its sockets.

(Here follows diagram marked p. 116*a*.)

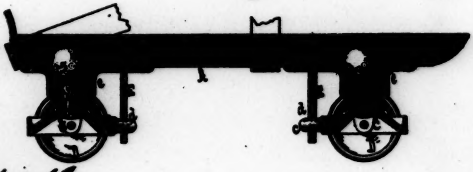
In the drawing, the letter A designates the foot-plate of a roller-skate, which may be made of wood or any other suitable material,

R. GIBSON. 116a

ROLLER-SKATES.

No. 189,451 Patented April 10, 1877.

Fig 1.



No. 150: Phoenix Cutter Co. to Spiegel & Co. p. 116a

Fig 2.

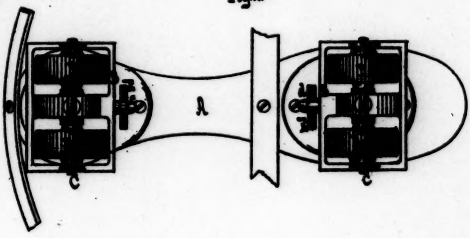


Fig 3.

Fig 4.

Witnesses.

Geo. Sheffield.
Hugo Bruggemann

Inventor.

Robert Gibson
by
Van Santvoord & Hauff
his attorneys.

Defendants Exhibit Gibson Patent
No. 189,857, dated April 10, 1877
U. S. Circuit Court Philip Pfleuger
District of Indiana Notary
The Rheem Caslon Co.
vs.
Augustus Spiegel et al

in the form best adapted for the purpose which it is to serve. On the under surface of this foot-plate are formed two sockets, *a a*, which form the bearings for standards *b b*, rising from roller-frames B B, so that said standards, together with the roller-frames, can swivel freely in their sockets.

In the example shown in the drawing, the ends of the standards are globe-shaped, and the sockets are formed to correspond to this shape, so that ball-and-socket joints are produced which allow the standards a certain freedom of motion advantageous for skating. This freedom of motion may, however, also be obtained to a certain extent by making the ends of the standards hemispherical, and placing an elastic cushion between them and the segmental plate which holds it in place, as shown in Fig. 3, or said ends may be made disk-shaped, and elastic cushions placed above and below, as shown in Fig. 4. The roller-frames B B form the bearings for axles C C, each of which supports one or two rollers, D D, said axles being by preference firmly mounted in the roller-frame, while the rollers turn loosely on the same.

From each of the roller-frames B B projects a pin, *c*, through a hole, *d*, formed in a standard, E, which is firmly secured to the under surface of the foot-plate, and which forms the regulator. The holes *d* are made somewhat larger than the pins *c*, so that the roller-frames B B are free to turn in a horizontal plane, and the foot-plate is allowed to assume a slightly oblique position. If the skater brings the weight of his body to bear on one side of the foot-plate, the roller-frames assume an oblique position, so as to enable the skater to describe any desired curve, while at the same time the regulators E prevent the roller-frames from swiveling round to such an extent that the stability of the skater would be endangered.

The standards *b* are retained in their sockets *a* by means of segmental plates *e*, which are firmly secured to the under surface of the foot-plate, and which embrace the shanks of said standards. These shanks are protected by elastic cushions *f*, so that they do not wear against the edges of the segmental plates.

What I claim as new, and desire to secure by letters patent, is—

1. In a roller-skate, the combination of a vertical swivel-standard, *b*, and a regulator, E, with the roller frame or truck supporting the axle of the rollers, and the foot-plate A, all constructed and arranged to operate substantially as and for the purpose herein described.

2. The combination, with the foot-plate A, standard *b*, and roller-frame B, which contains the rollers D D, of a ball-and-socket joint, substantially as and for the purpose set forth.

3. The combination, with the foot-plate A, swivel-standard *b*, roller-frame B, and the segmental plates *e*, which retain the standards in their sockets, of elastic cushions *f*, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 21st day of March, 1877.

ROBT. GIBSON. [L. S.]

Witnesses:

W. HAUFF.

E. F. KASTENHUBER.

117 UNITED STATES PATENT OFFICE.

ERNST HOFFSTAETTER, of New York, N. Y.

Improvement in Casters for Furniture.

Specification forming part of Letters Patent No. 196,017, dated October 9, 1877; application filed April 18, 1877.

To all whom it may concern:

Be it known that I, Ernst Hoffstaetter, of the city, county, and State of New York, have invented a new and useful improvement in furniture-casters, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

(Here follows diagram marked p. 117*a*.)

Figure 1 represents a vertical central section of a caster containing my improvement. Fig. 2 is a horizontal section thereof in the plane of the line *x x*, Fig. 1.

Similar letters indicate corresponding parts.

My improvement has reference to the construction of furniture-casters; and consists in a center-pin which is provided with a head, and passed through a cap-plate which is adapted to be affixed to the lower end of a table-leg or other article of furniture, while on the lower part of said center-pin is arranged the roller-frame of the caster, through which frame, as well as through the said center-pin, is passed a transverse bolt, in such a manner that the roller-frame and center-pin are thereby firmly held together; also, in combining with the caster an anti-friction wheel, which is situated in an opening formed in the roller-frame, and mounted on the said transverse bolt, so as to form a bearing between the cap-plate and the roller-frame, as hereinafter more fully described and claimed.

In the drawing, the letter A designates the center-pin of my caster, on the upper end of which is formed a head, *b*, which in the example shown, has a conical shape. B is a cap-plate, through which the center-pin A is passed, and which is provided with a cavity in its upper surface to receive the head *b* of said pin. This cap-plate B, moreover, is provided with holes, so that it may be affixed to the lower end of a table-leg, or to any other article of furniture, by means of screws or rivets, and without materially weakening the leg.

When my caster is to be applied to a table-leg or other like article, a lateral flange or rim may be substituted for the holes in the cap-plate B, or added thereto, which said flange or rim is adapted to embrace the lower end of the leg.

The roller-frame of my caster is composed of a plate, C, and a bracket, D, and it is mounted on the center-pin A through the plate C. Now, the center-pin A and the plate C of the roller-frame are each provided with a transverse hole, through which is passed a

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E. HOFFSTAETTER.
Caster for Furniture.

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v.
Spiegelsd.
} p. 117a

Fig. 1.

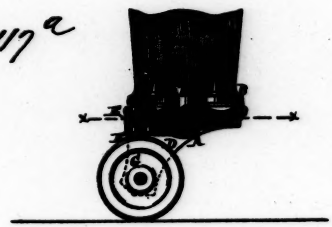

Fig. 2.

Witnesses.
Otto Hoffland
Hugo Bluggemann

Inven
Ernst Hoffst

Ku Sutland & C

his atto

117 UNITED STATES PATENT OFFICE.

ERNST HOFFSTAETTER, of New York, N. Y.

Improvement in Casters for Furniture.

Specification forming part of Letters Patent No. 196,017, dated October 9, 1877; application filed April 18, 1877.

To all whom it may concern:

Be it known that I, Ernst Hoffstaetter, of the city, county, and State of New York, have invented a new and useful improvement in furniture-casters, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

(Here follows diagram marked p. 117*a*.)

Figure 1 represents a vertical central section of a caster containing my improvement. Fig. 2 is a horizontal section thereof in the plane of the line *x x*, Fig. 1.

Similar letters indicate corresponding parts.

My improvement has reference to the construction of furniture-casters; and consists in a center-pin which is provided with a head, and passed through a cap-plate which is adapted to be affixed to the lower end of a table-leg or other article of furniture, while on the lower part of said center-pin is arranged the roller-frame of the caster, through which frame, as well as through the said center-pin, is passed a transverse bolt, in such a manner that the roller-frame and center-pin are thereby firmly held together; also, in combining with the caster an anti-friction wheel, which is situated in an opening formed in the roller-frame, and mounted on the said transverse bolt, so as to form a bearing between the cap-plate and the roller-frame, as hereinafter more fully described and claimed.

In the drawing, the letter A designates the center-pin of my caster, on the upper end of which is formed a head, *b*, which in the example shown, has a conical shape. B is a cap-plate, through which the center-pin A is passed, and which is provided with a cavity in its upper surface to receive the head *b* of said pin. This cap-plate B, moreover, is provided with holes, so that it may be affixed to the lower end of a table-leg, or to any other article of furniture, by means of screws or rivets, and without materially weakening the leg.

When my caster is to be applied to a table-leg or other like article, a lateral flange or rim may be substituted for the holes in the cap-plate B, or added thereto, which said flange or rim is adapted to embrace the lower end of the leg.

The roller-frame of my caster is composed of a plate, C, and a bracket, D, and it is mounted on the center-pin A through the plate C. Now, the center-pin A and the plate C of the roller-frame are each provided with a transverse hole, through which is passed a

E. HOFFSTAETTER. 117a
Caster for Furniture.

No. 196,017. Patented Oct. 9, 1877.

No. 150. Phoenix Caster Co. p. 117a a. Spiegeldd.

Fig. 1.

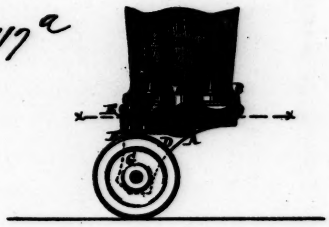

Fig. 2.

Witnesses.
Otto Applebaum
Hugo Muggenmann

Inventor.
Ernst Hoffstaetter
by
Wm. Clarke & Sons
his attorneys

Defendants' Exhibit Hoffstetter
No 196.057, Oct. 9. 1877
Philip Lauer
Notary.

U. S. Circuit Court
District of Indiana
The Phenix Cooler Co
vs
Augustus Spiegel et al

bolt, E, the hole in the plate C being made to terminate a little beyond the center-pin A, on one side of the latter, and the bolt E being fastened at its inner end by means of a screw-thread formed on the bolt and in said hole, as clearly shown.

It will be noticed that by means of the bolt E the roller-frame C D and the cap-plate B are held together, while they are moreover caused to turn with each other.

In the plate C is formed an opening, *a*, which intersects the bolt E, and in this opening is situated an anti-friction wheel, F, which is mounted loosely on said bolt. The anti-friction wheel F is of such diameter that it bears against the under surface of the cap-plate B, and by its means the perfect working of the parts of my caster is insured.

In order to increase the effect of the anti-friction wheel F, I arrange the same in a vertical plane with the axis of the roller G of the caster, as shown in Fig. 1.

One of the advantages of my caster is, that it is made without the usual socket, and hence does not weaken the table-leg or other article to which it may be applied. Another advantage is its simple construction and comparatively cheap cost.

What I claim as new, and desire to secure by letters patent, is—

1. The combination, in a caster, of a center-pin, A, having a head, *b*, with a cap-plate, B, roller-frame C D, and a transverse bolt, E, passing through the center-pin, substantially as described.

2. The combination of an anti-friction wheel, F, with the transverse bolt E, and journaled thereon, the roller-frame C D, cap-plate B, and center-pin A, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 17th day of April, 1877.

ERNST HOFFSTAETTER. [L. S.]

Witnesses:
J. VAN SANTVOORD.
E. F. KASTENHUBER.

118 *Complainant's Rebutting Evidence.*

UNITED STATES CIRCUIT COURT, *District of Indiana,* } *ss:*

PHŒNIX CASTER COMPANY *vs.* AUGUST SPIEGEL *et al.* } In Equity. No. 7747.

CHESTER BRADFORD, recalled, testified as follows:

(Examined by C. P. JACOBS, Esq., attorney for complainant:)

Question 1. State whether, since you were on the stand before, you have examined the Defendant's Exhibit Mackelcan & Murdock English patent; and, if yea, whether you understand the same and the invention described therein.

Answer. I have examined the said exhibit and understand the same. My examination has been chiefly directed to that portion consisting of figures 25, 26, 27, and 28 of the drawings and the description relating thereto, that being, as I understand it, the particular part of said patent which has been brought into this case.

Q. 2. What do you find in the specification of said English patent which indicates that anything more than the revolution of the caster plate in a horizontal plane was intended to be provided for in the caster therein described and the revolution of the floor wheels upon their axis?

A. So far as can be determined from the specification the object of the inventor was to provide a caster which would revolve about a downwardly projecting spindle from the caster plate, and the wheels of which would revolve upon their axis, the revolution of the caster—that is, the caster wheels, their axle or axle block—and the anti-friction roller being in a horizontal plane. I cannot find by the specifications that the inventor had any other purpose in view in making this invention.

Q. 3. What do you find, if anything, in said exhibit (in their patent) which indicates that the compound motion provided for in the Martin caster and described in Martin's patent was intended to be provided for or allowed in the English caster of Mackelcan & Murdock?

A. Nothing of the kind is mentioned in their specification, nor anything which would indicate that to be their purpose. In the drawing Fig. 25 shows a little space left between the spindle and the opening in the caster block into which it enters, but the purpose of this, as stated by the inventors in their specification, so far as there is any statement at all concerning it, is that there shall be "no oblique or lateral surfaces in motion that even touch each other."

That this is their object, rather than any oscillating move-
119 ment, is confirmed by the succeeding language of the specification, as follows: "The whole weight or force being thus directed entirely upon the horizontal axis of the wheels confers such strength and smoothness of action that casters on this principle may be made of much less weight than others and sustain and work under any given load," it being thus emphasized that the weight or force is entirely upon the axles of the wheels rather than against the lateral surfaces, which would be in contact if the spindle was made to fill the orifice in the axle block into which it enters.

Q. 4. Please examine the model marked "Defendant's Exhibit 1840 Caster" and state how it compares with and conforms to the device shown in the Defendant's Exhibit Mackelcan & Murdock's English patent.

A. I find it to be a substantially correct representation of the device shown in the patent, except that the caster plate seems to be elevated very slightly more above the floor wheels than in the drawing, and the spindle is, if anything, slightly smaller than in the drawing, while I find screws provided to hold the wheels in place, which are not in the drawing at all. The differences which I speak of in measurement are, however, very slight.

Q. 5. What do you find in the Mackelcan & Murdock patent, either in the description or drawings, which would indicate that any provision was made for placing the wheel-housing between the caster plate and the floor wheels?

A. There is nothing whatever, either in the specification or drawings, indicating any such construction. In fact, in the figures of the drawing to which I have referred there is nothing which could be fairly called a wheel-housing, but rather an axle block, which is entirely between the floor wheels and does not enclose them at all. In fact, there is no room between the caster plate and the floor wheels which would permit any wheel-housing to be used.

Q. 6. In the Martin device against what, if anything, would the caster plate, in its oscillation in a vertical plane, strike on either side?

A. The wheel-housing.

Q. 7. What effect would that have, if any, as a friction brake in retarding the movement of the floor wheels upon that side?

A. It would have no effect upon the floor wheel directly. If the rotation of the caster about the vertical spindle had not been completed it might impede that movement some.

Q. 8. Against what would the caster plate in the Mackelcan & Murdock patent, as shown in the Defendant's Exhibit Mackelcan & Murdock Patent and Caster Model, strike, if anything, if the caster plate should oscillate far enough on either side?

A. The caster plate in that event would come directly in contact with the floor wheels, there being nothing at all between said caster plate and the floor wheels.

Q. 9. What effect would that have upon the movement of the caster wheel thus coming in contact with the floor wheels?

A. Such a contact between the caster plate and floor wheels would operate as a brake and impede the rotation of the wheels.

Q. 10. Examine the model marked "Defendant's Exhibit Yale Caster" and state how this caster, in the respect just asked about, compares with the Mackelcan & Murdock caster and how with Martin's.

A. It compares in that respect with the Martin caster and not with the Mackelcan & Murdock.

Q. 11. Please explain.

A. That is, the caster plate comes in contact with the wheel-housing, when there is sufficient oscillation, and not with the floor wheels, the wheel-housing being between the caster plate and the floor wheels.

Q. 12. In what respect is the wheel-housing in the defend-
120 ant's model Yale caster before you like the wheel-housing in the Martin?

A. It is substantially the same in general form—that is, it sustains the wheel axle in the center and at both ends and is between the wheels and the caster plate. It has an elliptical opening in its top side (which, however, does not extend entirely through the wheel-housing). It extends back from a vertical line, passing through the axis of the wheels, to a point considerably to the rear,

and is different in having provision for a second anti-friction truck to the rear of the spindle which enters the opening.

Q. 13. What do you find in the Mackelcan & Murdock patent or model that is in all respects the equivalent of the wheel-housing in the Martin caster?

A. I do not find anything that can be said to be the same in all respects as the wheel-housing in the Martin patent.

Q. 14. State whether you have read the testimony taken at Washington, D. C., on behalf of the defendant, as given by the witness, Octavius Knight, and whether you have examined the several American letters patent made exhibits by the defendant and attached to his deposition.

A. I have.

Q. 15. Please examine those exhibits and state briefly and succinctly, in their order, which embodies the invention described in the Martin patent and wherein they differ.

A. I do not find in any of them the invention shown and described in the Martin patent, nor in any of them any device or combination of devices by which the same result will be accomplished. In Defendant's Exhibit Bailey Patent I find a single-wheel caster, the spindle of which extends directly up very nearly perpendicularly above the wheel into a bearing formed to receive it. This spindle is made loose and may oscillate from side to side, but the result, so far as this caster is concerned, would be simply to throw the weight upon one or the other of the sides of the floor wheel, and could not answer the purposes of the Martin caster, especially as the wheel is shown as having a rounded surface.

In the several defendants' exhibits, patents on roller skates, to wit, Plimpton patent, No. 37305; Plimpton reissued patent, No. 3906; Plimpton reissued patent, No. 4292; Plimpton patent, No. 55901; Hodgson patent, No. 88711; Morris patent, No. 93110; Lemman patent, No. 103,346; Fenton patent, No. 122,376; Dodge patent, No. 136,711; Saladee patent, No. 177,567; Gano patent, No. 188,351; Gipson patent, No. 189,451, all show roller skates having paired floor wheels and embodying various devices by which, as the foot piece of the skate is tilted one way or the other, said floor wheels are thrown into an angle with the direct line of motion, and the skate is thus caused to describe in its further movement an arc of a circle. The object of the tilting is in each case to so operate upon the mechanism which governs the floor wheels as to cause this movement, and is in no case for the purpose of causing the floor wheels to oscillate so as to pass over obstructions. The floor wheels cannot oscillate without being thrown into the position stated, and if in the direct forward movement of the skater they should come in contact with any obstruction both would be raised equally from the floor, or else they would be forced into the position described. The roller skates are to be used on a smooth floor; and, in addition to there being no provision for allowing one wheel to rise above another, as when they should encounter an obstruction, there is no reason for such provision, and, as I have said, the encountering of such an ob-

struction would either raise both wheels of the pair equally or change the course of the skater.

Long.—In Defendant's Exhibit Long Patent, No. 38232, I find a pair of wheels mounted on an axle, the two parts of the fifth wheel, which is interposed between said axle and the frame-work of the vehicle, being left slightly apart at the edges and connected by a bolt in the center, said bolt being so arranged that the two parts of the fifth wheel may oscillate somewhat in relation to each other.

121 There is nothing shown in this patent which can properly be called a wheel-housing nor an elliptical opening, but simply provision for oscillation about a king-bolt arranged vertically above an axle between the two parts of the fifth wheel.

Ford.—In the Defendant's Exhibit Ford Patent, No. 58999, I find a single-wheeled caster which has a wheel-housing, into which a spindle from the caster plate enters and which is secured to the leg of the furniture by a screw passing up through the opening in the housing in said spindle. The opening in the housing is not shown to be elliptical nor is there shown to be any means of oscillation or any intention that there should be any oscillation; beside which there is only a single wheel in this caster, and oscillation in such a caster is unnecessary.

Barnes.—In the Defendant's Exhibit Barnes Patent, No. 66116, I find two floor wheels, with a small block between them, secured to or formed in pieces with the axle, and an upwardly projecting spindle, extending from said block up into a socket, secured in the bottom of the furniture leg. There is nothing shown in this patent which may be fairly called a housing, nor any apparent means provided for a lateral oscillation, it being understood, of course, that the fit between the spindle and its socket is not in this case, more than in any other similar case, exact.

Ford.—In the Defendant's Exhibit Ford Patent No. 132,066 I find a caster only slightly different from the Ford patent No. 58999, and referring to and bearing no closer resemblance to the Martin device than said patent No. 58999.

Perry.—In the Defendant's Exhibit Perry Patent, No. 135,286, I find a single-wheeled caster having a wheel-housing secured to the caster plate or plate upon the bottom of the furniture leg by a vertical spindle or bolt extending up through the wheel-housing at a point some distance to one side of the floor-wheel axle. I also find an anti-friction truck, located just behind a vertical line drawn through the axis of the floor wheels, which runs upon a track formed upon the caster plate as the caster revolves about the spindle or bolt. I do not find, however, any provision for lateral oscillation, and, indeed, from the construction indicated by dotted lines in figure 4 of the drawing, such lateral oscillation would be impossible, there being apparently two bearings in the wheel-housing for the vertical spindle or bolt—one at the bottom and one at the top of the rear part of the wheel-housing—and a considerable space between them; and such a construction would effectually preclude any effective oscillation; besides which I find only a single floor wheel, and this is shown as hav-

ing a rounding surface, which would render any oscillation unnecessary in this caster.

Netz.—In the Defendant's Exhibit Netz Patent, No. 149,782, I find a single-wheeled caster provided with a housing adapted to be secured to the bottom of the furniture leg by a vertical screw or spindle, and also provided with an anti-friction truck over the floor wheel. There is no apparent provision for oscillation, and, as in the other case, there is but a single floor wheel which is shown to have a rounding surface, which would render oscillation unnecessary.

Buckingham.—In the Defendant's Exhibit Buckingham Patent, No. 150,132, I find a double-wheeled caster, having two floor wheels and wheel-housing, with a vertical spindle, and provided with three anti-friction trucks between the wheel-housing and the caster plate. There is no provision for oscillation in this caster, the spindle and wheel-housing being shown in close contact throughout the entire length of the bearing between them and the three anti-friction trucks, effectually precluding any oscillation even if there were looseness in this bearing or even if there were an elliptical housing opening in the Martin patent; but, as I said before, nothing of the kind is indicated.

Blair.—In the Defendant's Exhibit Blair Patent, No. 159,492, I find, as in the Long patent, a fifth wheel for vehicles, provided with means of oscillation. There is nothing, however, in this patent which resembles a caster provided with a wheel-housing or which anticipates the Martin invention.

122 Arnold & Hanschildt.—In the Defendant's Exhibit Arnold & Hanschildt Patent, No. 126,433, I find a single-wheeled furniture caster having a wheel-housing secured to the caster plate by a conical spindle extending downward through said caster plate. I find also two anti-friction trucks, the axes of which are shown as being in substantially radial lines from the spindle, one on each side of the floor wheel, said axes being, as nearly as I can ascertain from the drawing, at an angle of about 45 degrees from each other. No means are indicated by which a lateral oscillation is provided for, nor is any necessary, there being, as in several of the other cases, but one floor wheel, and that having a rounding surface.

Q. 16. Please examine the answer to question 11 of the direct examination of Octavius Knight and state whether or not you agree with him in reference to the wheel-housing of the Yale caster therein set forth'; and, if you desire to make any explanation as to criticism on your testimony or any corrections in any testimony heretofore given by you in relation thereto, please take this opportunity and do so fully.

(Objected to on the ground that it is incompetent for the witness to explain or alter the testimony given on his former examination, to which the testimony of Knight refers.)

A. I disagree with Mr. Knight in his answer to question 11 wherein he states that the Yale caster has no elliptical housing opening, as I regard what I call the opening, but what he calls a recess

or cavity, on the top of the housing as the full equivalent, for the purposes of this investigation, of the opening extending entirely through the housing—that is, which permits the spindle to oscillate therein. The only reason that Martin's opening extends through is that he has provided a fastening between the opening and the spindle by means of a collar or enlarged screw head below the housing; but this has manifestly nothing to do with the oscillation of the spindle in the housing. The spindle oscillates just as well and accomplishes the result in the same manner when fastened by a pin passing through its lower end within the housing as when the spindle extends down through and has a collar to the large screw beneath said housing.

I desire in this connection to state that there is a manifest intention in this answer of Mr. Knight to misrepresent my former testimony in this matter, as his language would leave it to be inferred that I had testified that the opening did extend through in the Yale patent caster, whereas I did testify in language which was capable of no other construction than the correct one.

I said, in answer to question 13, among other things, the following: "I find in the wheel-housing an elliptical housing opening into which the spindle extends, but instead of extending down through the housing and having a head upon the lower end I find the axle of the anti-friction truck extending through this spindle, thus securing it to the housing."

He also says in this answer: "The oscillation of the housing in the Yale caster is not on the bearing of the anti-friction wheels, as stated by Mr. Bradford, but necessarily on the axis of said wheel."

In my testimony in regard to this fact I used the word "axle" instead of "bearing," but it is well known that these two words "axle" and "axis" are used many times as synonymous, and for my authority for this use I refer to Webster's Dictionary; this also, therefore, is a palpable misrepresentation of my testimony. The word "axle" in my former testimony, to which I refer, is found in line 8, on page 11, thereof.

Referring to Mr. Knight's criticisms on my answer to question 14, I will say that there is a probable mistake in the record, as I understood the word "without" in the question to be "with;" although a part of the spindle—that is, the part which is cast in piece with the caster plate—does, of course, remain stationary while the caster revolves, but that part which extends down through the center, and through which the pin forming the axle of the anti-friction truck passes, revolves with the caster. My answer, at all events, to that question was not as full as it should have been.

I disagree with the opinion expressed by Mr. Knight wherein he expresses himself as follows: "The fact that the hub of said anti-
friction wheel may extend partly over the floor-wheel axis
123 has manifestly no practical bearing upon the question." I mean that it has some bearing upon the question, especially when the inside edge of the bearing surface of said wheel is substantially directly over the axis of the floor wheels, as I still maintain that it is in the Yale caster.

In Mr. Knight's criticism on my answer to question 22 he again directly misrepresents my testimony, wherein he says that I said that there was no feature of similarity between the Yale caster and that described in the Hoffstaetter patent, as I did in my said answer expressly and particularly point out one feature of resemblance in the following words: "Said anti-friction truck and said spindle, both being secured to the wheel-housing by a single shaft or pin which extends through them. In this latter particular it is like the Yale caster introduced in evidence."

While possibly not intentional, as I can see that my answer to question 65 of my former deposition is scarcely so clear as it should be, Mr. Knight misstates or misunderstands my opinion as I intended to be understood. For the purposes of explanation I will now quote the question and answer:

"Q. 65. If it were round could the spindle oscillate in it?

"A. It could not unless the hole were made so large as to destroy its other purpose, namely, that of holding the plate in position."

When I made this answer I intended to convey the idea that if the hole were made so large as to prevent it from holding the plate in position that it would destroy the effectiveness of the caster altogether, and did not mean to be understood, of course, as saying that the spindle could not oscillate in a hole larger than itself, however large it might be. I still maintain the opinion that if the opening were too large in the direction of the draft of the spindle upon the housing it would destroy or largely impair the usefulness and effectiveness of the caster. I disagree with the statement of Mr. Knight wherein he criticises my answer to question 67, as I consider the downwardly projecting portion upon the under side of the caster plate as more entitled to be called the spindle than the rivet which passes down through its center, and through the lower end of which the pin which secures the parts together is passed. It is about this portion that the wheel-housing revolves and with which it is directly in contact; and I still maintain that the passing of the horizontal pin through the lower end of the vertical pin or spindle is the mechanical equivalent of the rocker-formed collar bearing described in the Martin patent, and the collar and head used by him to secure the parts together, in connection with a screw or other suitable attaching device, as they both permit identically the same movement—that is, a vertical spindle oscillates over a rounded surface near its lower end, and the required oscillation between the wheel-housing and the caster plate is thus permitted.

Mr. Knight's criticism of my answer to question 34 is manifestly absurd. It is too evident to require argument that the form of the caster plate or the mode of attaching the caster plate to the leg of the furniture in no way affects the operation of the caster, and my answer to said question 34 is exactly correct.

Cross-examination by CHARLES H. BURCHENAL:

Q. 17. What function is served by the Martin patent other than to support the floor wheels and the anti-friction wheel?

A. It prevents any possibility of contact between the caster plate and the floor wheels, and is adapted by its construction to oscillate upon the spindle, on the under side of the caster plate.

Q. 18. I am speaking of the housing as separate from the spindle, or from any other part of the caster.

A. As entirely separated from the caster plate, I see no function other than those you have mentioned which it performs.

Q. 19. Are not the same functions served by what you call the caster block in the Mackelcan & Murdock patent?

A. They are. Neither caster, however, would be operative without a caster plate or some means of attaching it to the furniture, and a caster plate very similar to some of these shown would be necessary wherever an anti-friction truck was used.

Q. 20. In the Martin caster does the oscillation of the housing necessarily bring the housing in contact with the caster plate?

124 A. Not necessarily at the sides. It depends upon the degree of oscillation.

Q. 21. With all the oscillation of which it is capable, is the caster plate necessarily brought in contact with the housing?

A. It is easily oscillated to come in contact with the housing on either side above the floor wheels, and apparently could be oscillated considerably further if the housing were not present.

Q. 22. Is said contact desirable or useful in the operation of the caster?

A. It is not, as I understand it; on the contrary, I should regard it as something of a disadvantage, and the casters appear to be so constructed that in the ordinary operation there will be no such contact.

Q. 23. Do you mean by that that the amount of oscillation ordinarily required in the use of casters would not be sufficient to make use of all the oscillation permitted by the caster?

A. That is how I mean to be understood—that is, that sufficient oscillation is provided for to meet extraordinary as well as ordinary demands, and that in the ordinary operation of the caster no contact between the caster plate and the sides of the wheel-housing would occur.

Q. 24. In the Martin caster there is a downwardly projecting boss or stem forming part of the caster plate extending through the opening of the wheel-housings, is there not?

A. There is.

Q. 25. There is a collar attached to the lower end of that boss or stem which projects through the opening, is there not?

A. There is a collar or enlarged head upon the rivet or screw that passes up through the stem or spindle.

Q. 26. The collar so attached to said boss or stem rides upon a part of the housing which is called the rocker-formed collar bearing, does it not?

A. It does—that is, these parts are not usually in contact, but they may be.

Q. 27. Is there any other place in the Martin caster for the attachment of a collar except the place you have mentioned?

A. No, sir.

Q. 28. Is there any other place where a rocker-formed collar bearing would be effectual except at the place you have mentioned its being found?

A. The construction might be changed so as to raise the rocker-formed collar bearing within the housing if that were desirable, although I can see no purpose in so doing.

Q. 29. If there was a collar bearing raised inside of the opening, how would that collar be enabled to ride upon it, the collar passing through the housing opening as is done in the Martin patent?

A. It would work, so far as that is concerned, exactly as it does now; it would be then, in fact, the same as if the housing were continued around outside of the present collar and one side or the other, or both, were slotted so that the collar might be inserted. I cannot explain this as well in words as I could illustrate it by a sketch, but I can see very readily how it might be done.

Q. 30. In the Martin patent does not the downwardly projecting boss or stem remain rigid and stationary?

A. It does in relation to the furniture leg to which the caster plate is attached.

Q. 31. In the Yale caster is not the pivot upon which the caster revolves attached to the housing, and does it not revolve with the revolution of the housing in the caster plate?

A. The central pin which extends vertically down through the hollow spindle, around which the housing revolves, is secured to the housing and revolves therewith; the spindle itself, corresponding very closely to the spindle in the Martin patent, is cast with the caster plate as in the Martin patent, and remains stationary with said plate, the difference being that the central pin, or rivet, or screw revolves with the housing in one case and is stationary with the spindle in the other.

125 Q. 32. Is the part which you call the spindle in the Yale patent, adapted to or capable of having a collar attached to the lower end of it?

A. I see no reason why it cannot have a collar attached to the lower end; but I will say, however, that it is not long enough, as shown in the Yale caster, to adapt it to the construction of the Martin caster, as the part of the housing having the collar bearing would be too fragile for effective use if so formed.

Q. 33. Suppose the part which you call the spindle in the Yale caster was removed entirely or shortened until it projected no further down than the top of the housing, would the caster still revolve—I mean would the housing of the caster still revolve?

A. Certainly.

Q. 34. About what would it revolve?

A. It would then revolve about the central pin and, unless that pin were considerably enlarged or the opening made considerably smaller, there would be so much play between the parts as to make the operation of the caster very unsatisfactory. The point of contact between the spindle and the housing, where the draft comes upon

the housing from said spindle, should be so constructed that there will not be very much play between the parts; otherwise the relation of the parts is apt to be changed during the operation of the caster, to its disadvantage.

(Defendants object to all that part of the answer not responsive to the question.)

Q. 35. In the Bailey patent, No. 12578, do you not find a furniture caster so constructed as to admit of revolution in a horizontal plane and of oscillation in a vertical plane?

A. Those movements seem to be permitted by the construction shown.

Q. 36. In case of a broad floor wheel being used, a broad surface presented to the floor, would not oscillation in a horizontal plane be useful or desirable in a single-wheeled caster?

A. I do not think it would be of much service in any case, but certainly not where, as in the Bailey patent, the surface of the wheel is made rounding.

Q. 37. If one side of the wheel should strike a slight inequality in the floor would not the operation of the caster be facilitated by allowing the wheel to adapt itself to that inequality by assuming the proper inclination?

A. The advantage, if any, would, in my opinion, with any caster commonly made, be so slight as to be scarcely appreciable.

Q. 38. Do you not find in the roller-skate patents which have been given in evidence, or in some of them, the two-wheeled truck attached to a foot plate in such a manner as to admit of revolution in a horizontal plane and of oscillation in a vertical plane?

A. I do not, and will explain why, taking one of them by way of illustration and selecting the Lemman patent, No. 103,346, for the purposes of such illustration: In this I find, as in the other roller-skate patents, paired floor wheels adapted to describe a partial revolution only in a horizontal plane and to oscillate in a plane slightly at an angle with a vertical plane. The part that corresponds most closely to the wheel-housing in a caster is extended out and secured to the under side of the foot piece in such a manner as to prevent the wheels from revolving in a horizontal plane, except slightly or for a short distance, and the oscillation, by reason of such attachment, is always made at a slight angle, so as to bring
126 one wheel of each of the two pairs used in roller skates toward the center of the skate and the other wheel of each of the pairs toward the end of the skate, thus bringing the several wheels into such a position that in the further movement of the skater his course will be circular instead of directly forward. It would destroy the purpose of the roller skate altogether if the pairs of wheels were so attached as to be capable of a complete revolution in a horizontal plane. The parts in the Lemman patent which extend upwardly from the portions which correspond to the wheel-housing of the caster and are secured to the foot piece, to which I have referred, are marked with the letters d d^1 and are secured to the foot piece by what are called "set-screw pivots" G G^1. In this

Lemman patent a spring, lettered I, connects projections on the wheel-housing and serves to return them into a position bringing the wheels all into line; but this, of course, has nothing to do with the caster.

Q. 39. Suppose the parts which thus restrict the revolution of the housing were removed, would not the housing revolve freely in a horizontal plane?

A. It would, and the utility of the device as a roller skate would be entirely destroyed.

Q. 40. And would not the wheels and their axle oscillate in a vertical plane?

A. They would.

Q. 41. Then, if each pair of wheels and their housing were cut off, say at the point J J^1—cut away from the skate—and were attached to the bottom of a piece of furniture would not the trucks revolve in a horizontal plane and oscillate in a vertical plane, with reference to such article of furniture?

A. They would.

Q. 42. You say that a roller-skate wheel encountering an inequality in the floor would either raise both wheels from the floor or change the direction of the skater. Have you made any actual test of this?

A. I experimented a little with a roller skate while I was making my examination of these patents. So far as I made my examination, which, however, was not very thorough, it confirmed me in this theory.

Q. 43. Do you say that one wheel of a roller skate, admitting of oscillation, would not rise over a slight obstruction, leaving the other wheel on the floor, without changing the direction of the skater?

A. Not if the parts were fitted perfectly and the skate was in good order. Of course I mean in this to understand you as meaning by "slight inequality" some appreciable inequality. I mean to be understood in this matter as saying that whenever the wheels are thrown out of their ordinary relation to the foot piece, by oscillation, that they are at the same time thrown into position so that one wheel of each pair is forced inwardly toward the center of the skate and the other wheel of each pair is forced outwardly from the center of the skate, thus bringing them into position to move in a circular instead of a directly forward direction. This position is clearly illustrated in figure 3 of the drawing of the Lemman patent.

Q. 44. With a skate so constructed could not the skater proceed in an upright position over a slightly inclined floor without being thrown from a straight line?

A. The inclination of the floor would, of course, have to be considerably more than is ever likely to be in a floor used for this purpose to cause the deflection from a straight line to be noticeable, but there is no doubt whatever that any change in the relation of the foot piece to the floor wheels will to a greater or less extent change the direction of the skate wheels in contact with the floor. Skaters may, of course, govern their movements so that their course

on the whole would even in such a case be directly forward; but the skate wheel in contact with the floor if thrown out of the ordinary relation must necessarily move in a circle rather than directly forward, and this fact is not changed by the further fact that such deflection from a straight line may be very slight.

127 Q. 45. Is not that effect caused by the restrictive devices which are used to limit the revolution of the housing and to connect the two together, so that the motion of one will govern that of the other?

A. Certainly, that is the purpose of these devices; it is to prevent the trucks from making a complete revolution and to throw them into this positon which I have described, when they are oscillated in relation to the foot piece.

Q. 46. With such restrictive devices removed, then no such effect would be produced?

A. Not necessarily.

Q. 47. In the Long patent and in the Blair patent, to which you have referred, do you not find the two-wheeled truck so constructed as to admit of revolution in a horizontal plane and also in a vertical plane?

A. I find in these patents devices illustrated which permit of oscillation in a vertical plane and of revolution in a horizontal plane, so far as the other parts of the vehicle will permit.

Q. 48. If the vehicle is raised sufficiently above the wheels, would not then those devices admit of the complete revolution of the trucks about the king-bolt or pivot by which the axle is connected with the vehicle?

A. Not unless the tongue were removed in the Long patent and the rod (H) was removed in the Blair patent. With these devices removed, there is no apparant reason why a complete revolution should not be effected if the vehicle were raised high enough.

Q. 49. In both cases the object of the truck is to carry the portion which is imposed upon it, is it not?

A. Certainly.

Q. 50. In both cases the object of the oscillation is to enable the wheels to adapt themselves to the inequalities of the surface over which they are passing, is it not?

A. That appears to be the purpose.

Q. 51. Would not that be the effect of those devices, in your opinion?

A. It most certainly would.

Q. 52. In the Barnes patent to which you have referred, if the socket was loose with reference to the spindle, would not the truck oscillate with reference to the article of furniture to which it was attached so as to enable the wheels to adapt themselves to inequalities in the floor?

A. I presume it would to some extent, depending upon the degree of looseness and the location of the contact points.

Q. 53. In the Arnold & Hanschildt patent do you not find a caster plate attached to an article of furniture with a downwardly

projecting boss or stem passing through the wheel-housing and having a collar attached upon the lower end of such stem?

A. What is called a knot in the specification is upon the lower end of the stem, which would be substantially the same, however, as a collar for the purpose.

Q. 54. In the patent of Netz do you not find an anti-friction wheel situated directly above the axis of the floor wheel and upon which the caster plate revolves or bears in the revolution of the caster?

A. I do.

Q. 55. In the two patents of Ford do you not find a downwardly projecting boss or stem passing through the opening in the wheel-housing and kept in its place by a screw with a head sufficiently large for that purpose, passing through the boss or stem up into the leg of the furniture?

A. I do. That is what I have already stated, as I remember.

Redirect examination by C. P. JACOBS, Esq.:

Q. 56. If the tongue were removed and the vehicle of Long lifted above the sills, as stated in Mr. Burchenal's query, what effect would it have upon the thing itself, upon the machine? Would there be any operative parts left?

128 A. The effect would be a dismembered device, which would not be operative until the tongue was restored or some equivalent device substituted.

Q. 57. Is not the axle of the wheels in both the Long and Bailey patents an integral part of the machine itself?

A. In the Long patent it is so shown; in the Bailey patent, as I remember it, only the particular parts surrounding the fifth wheel are shown. Not even the wheels are shown in that patent, but are necessarily understood to be present, as well as a tongue or shafts, or some such device by which the team is to be attached to the vehicle.

Q. 58. As I understand you, the changes made as implied in Mr. Burchenal's questions with reference to the Blair and the Long devices, as shown in their patents, would be destructive of the machines themselves for the purposes described in the patent. Am I right?

A. While the effect would not, perhaps, be to destroy the effectiveness of the devices, it would be to very seriously impair them. No one would think of running a wagon without a tongue or an equivalent device, although, of course, it could be done.

And further the deponent saith not.

C. BRADFORD.

I, Wm. E. Barton, examiner, duly appointed by the court in this behalf, do hereby certify that the foregoing deposition of Chester Bradford was taken before me, by agreement of parties, at the office of C. P. Jacobs, in the city of Indianapolis, Ind., on the 15th day of December, 1884; that this deposition was taken on behalf of the complainants, The Phœnix Caster Company, in the cause now

pending in the circuit court of the United States for the district of Indiana, in equity, wherein The Phœnix Caster Company are complainants and August Spiegel *et al.* are defendants; that these depositions were reduced to writing by me, and that said witness was by me previously sworn to testify the truth, the whole truth, and nothing but the truth relating to matters at issue in said cause; that on the taking thereof the complainants were represented by Chas. P. Jacobs, Esq., their solicitor, and the defendants by Chas. H. Burchenal, their solicitor; that I am not akin to any of the parties in said action, have no interest therein, and am not concerned in the event of the said suit.

In witness whereof I have hereunto set my hand this 18th day of December, 1884.

WM. E. BARTON, *Examiner.*

129 UNITED STATES OF AMERICA, } ss:
District of Indiana, }

I, Noble C. Butler, clerk of the circuit court of the United States for the district of Indiana, do hereby certify that the above and foregoing is a full, true, and complete transcript of the record and evidence in the cause of The Phœnix Caster Company *vs.* Augustus Spiegel *et al.*, as fully as the same appears of record and remains on file in my office.

Seal Circuit Court of the United States, District of Indiana.

Witness my hand and the seal of said court, at Indianapolis, in said district, this 8th day of October, A. D. 1886.

NOBLE C. BUTLER, *Clerk.*

Endorsed on cover: Indiana C. C. U. S. No. 150. The Phœnix Caster Company, appellant, *vs.* Augustus Spiegel, Henry Frank, and Frederick Thoms. Filed October 11, 1886.

Supreme Court, U.S.
FILED.
NOV 14 1889
JAMES H. McKENNEY,
CLERK.

IN THE

United States Supreme Court.

OCTOBER TERM, 1889.

THE PHŒNIX CASTER COMPANY,
vs.
AUGUSTUS SPIEGEL, ET AL. } No. 150.

Brief and Argument for Appellant.

CHARLES P. JACOBS,
Solicitor.

FRANK H. SMITH, PHOTOLITHO.

IN THE

United States Supreme Court.

OCTOBER TERM, 1889.

THE PHŒNIX CASTER COMPANY,
vs.
AUGUSTUS SPIEGEL, ET AL. } No. 150.

ARGUMENT FOR APPELLANT.

This action was brought by the Phœnix Caster Company, the owners by assignment of Letters Patent No. 190,152, issued May 1, 1877, to Alexander C. Martin for an improvement in casters. The complainant's title thereto is derived as follows:

Alexander C. Martin assigned the said letters patent to Wm. H. Tucker and others on the 29th of December, 1877, and Wm. H. Tucker and others, assignees, including the executor and the sole legatee of Robert S. Dorsey, one of said assignees who had previously died, assigned all their interest to the Phœnix Caster Company on the 14th of December, 1883, and all the matters relating to these assignments of the title have been put in evidence and are set forth in full in the record. (Pages 30–38.)

The bill alleges that the defendants, Spiegel & Co.,

infringed upon Martin's patent by the sale and use of furniture-casters known as the Schenck or Yale caster, made by a corporation known as the Yale Caster Company, of New Haven, Conn., and concluded with a prayer for an injunction and accounting.

(Record, pp. 1–5.)

The defendants answered the bill, denying any infringement of Martin's patent, and further denying that Martin was the original inventor of the caster for which letters patent were issued to him, and avers that it had been known and used long before the Martin invention, by a large number of persons in the United States and foreign countries, and had been shown and described in a large number of patents issued from the United States and foreign Patent Offices. The answer further claimed that Martin's device involved no invention whatever, and was a mere colorable variation of previous devices.

(Record, pp. 7–12.)

To this answer the general replication was filed, putting the case at issue. (Record, p. 12.)

Upon the hearing in the Court below, the bill was dismissed for want of equity, the Court (Woods, J.,) holding that the defendants' (the Yale) caster did not infringe the Martin patent. (Record, p. 14.)

ARGUMENT.

In discussing the issues involved in this case, it will be seen that they involve several questions:

First. The title of the complainant.

Second. The validity of Martin's patent.

Third. The construction of Martin's patent.

Fourth. Infringement.

I shall proceed now to take these up in their order.

I. THE COMPLAINANT'S TITLE.

The complainant derives its title, as has been said, through two assignments, viz., that from Martin to Wm. H. Tucker, and others; and next, that from Wm. Tucker and others, to the Phœnix Caster Company.

It was insisted by the defendants in the Court below that the assignment from Martin to Wm. H. Tucker and others the assignees of the complainant, did not convey a complete title, but that there remained a portion of the legal title to the patent in Alexander C. Martin, which passed, upon his death, to his wife, who became his administrator

To this allegation three things may be said in the way of reply:

First. The assignment is absolute in its terms, and the second clause of it recites that: "The said party of the first part hereby sells, assigns, transfers and sets over unto the said parties of the second part, all the right, title, and interest, whatsoever, which said party of the first part has in said improvement in casters, and in and to the said letters patent aforesaid * * * the same to be held and enjoyed by the said parties of the second part for their own use and behoof, and for the use and behoof of their legal representatives, to the full end of the term for which said letters patent were, are, or may be granted, thus including all extensions, as fully and

entirely as the same would have been held and enjoyed by the party of the first part had this assignment and sale not been made."

Surely, words could not be chosen which would convey more fully and absolutely the entire title of Martin in his invention and letters patent; and as will be seen by reference to the assignment which is set out in full in the record (p. 35) that the consideration of this absolute grant was the agreement of the assignees to pay Martin a certain royalty on all casters manufactured by them. This is set out in the sixth clause of the assignment. The ninth clause of the assignment provides, that if the assignees shall fail to pay this royalty, and to perform the contract as its stipulations require, then the assignment should be null and void, and the title should re-vest in said Martin. No part of the title to the patent is reserved, whatever. It is an absolute title, subject only to forfeiture for failure to perform.

It need not be argued here before this Court that the law does not favor forfeitures, for it is elementary doctrine, and until this is controverted I shall not stop to cite authorities upon this point.

No forfeiture appears to have been claimed or made, and this assignment certainly caries the entire title and gives the assignees the sole right to maintain an action for the infringement of such letters patent. If there was any infringement at all, it was an infringement of the complainant's rights, not of Martin's.

In two decisions made by Judge Drummond, it was held that the person who holds the legal title to the patent may maintain a bill in equity, and the fact that

others claim an interest therein constitutes no defense of which the infringer can take advantage.

Graham v. *McCormick*, 11 Fed. Rep., 859.
Graham v. *Geneva Lake Co.*, 11 Fed. Rep., 138.
Goodyear v. *Central R. R. Co.*, 1 Fish., 626.

Second. There is no proof whatever to sustain the allegation of the answer that Martin is dead, or that his wife or anybody else, has ever been appointed or qualified as his administator.

Third. There is no evidence whatever that either Martin or any other person, on his behalf, claims any interest whatever in the patent or in the matters in controversy in this action; on the contrary, for aught that appears, no such adverse interest in the letters patent, or claims thereto, is set up by anybody, and the only persons who pretend that there is any such adverse interest are the iufringers themselves, and they offer no proof whatever on the subject. It strikes me that this first question, that of the complainant's title, is attended with no difficulty whatever, and all the pretended objections to it amount to nothing.

II. THE VALIDITY OF MARTIN'S PATENT.

The validity of Martin's patent is called in question by the averments of the defendant's answer. It is alleged in substance, that Martin was not the original inventor of the caster for which letters patent were issued to him, and that it had been known and used long before Martin's invention, by a number of persons in the United States and foreign countries, and had been shown and described in a large number of United States and foreign patents, which are set forth and referred to in the answer by dates and titles.

It is further averred that Martin's patent was invalid because the device therein described involved no invention whatever, and that Martin's caster was a mere colorable variation of previous devices.

Let us consider the first of these objections first, namely, the one alleging that Martin was not the inventor of the caster described in his letters patent, and that it was known to and described by others before his invention.

To substantiate this defense, twenty-three United States patents and one English patent have been given in evidence by the defendants, and, inasmuch as the latter seems to be chiefly relied upon by the defense, as showing that Martin was anticipated in his invention, it will be proper to consider it first, as the American patents referred to really cut but little figure in the case, *except to show, as I shall insist they clearly do, that the advance made by Martin over anything that had preceded him was a very great one, and that its instant and continuous success in the market, and its use by the public at large, demonstrate beyond question that the device was meritorious and original, and that Martin was really a pioneer in this line of invention and, as such, entitled to a broad construction at the hands of the Court.*

This English patent in one issued to Mackelcan & Murdock, December 23, 1840, and is for a furniture-caster. The drawings contain a number of figures, of which Nos. 25, 26, 27, 28 and 29, alone seem to have any bearing whatever upon the matter in controversy in this case. These figures show a plan of a furniture-caster having two floor-wheels, and in this respect alone,

it is like Martin's caster. These floor-wheels are mounted on an axle, and between the wheels is a small block carrying a pivot, on which is mounted a small friction-wheel. Over these floor-wheels is the plate by which the caster is attached to the leg of the furniture; this plate having a spindle which enters into a socket in the block behind and between the floor-wheels. Two models of this caster have been given in evidence, and the general construction of it is illustrated by the following engravings which have been reproduced by us from a cut shown upon a circular issued by the Yale Caster Company, the real defendant in this case.

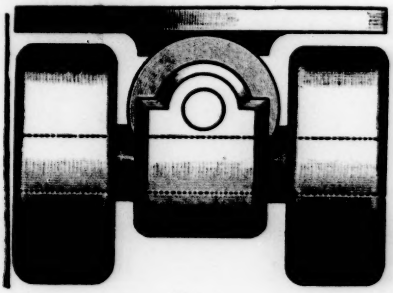

Fig. 1.

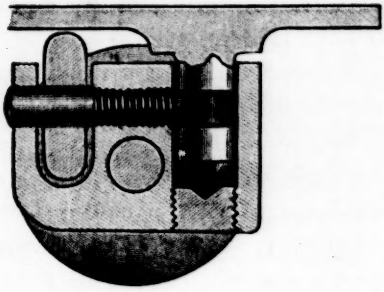

Fig. 2.

The Mackelcan & Murdock Caster.

Fig. 1 is a front view of the Mackelcan & Murdock caster, and Fig. 2 is a vertical section through the top plate and center block of the same, between the floor-wheels. It will be seen that this caster has no housing whatever, the sides of the top plate projecting over the floor-wheels on each side, and, if the top plate tips at all, coming in close contact therewith. This caster, it is insisted, involves all the principles found in the Martin caster, and is so nearly identical with it that Martin's caster involves no invention.

In order that the Court may compare this English caster with a caster of the Martin type, I respectfully refer to the cut of the defendant's (or Yale) caster, found facing page 45 of the record, which will illustrate more clearly than words could do the serious points of difference between the English Mackelcan & Murdock caster, and the caster of Martin and of the defendants.

The English caster is susceptible of but one movement, namely, the spindle attached to the top plate is adapted to revolve in a socket formed in the block behind and between the floor-wheels, or in other words, if this top plate, or furniture plate, be screwed to the legs of the table or chair, the lower part of the caster, including the floor-wheels will revolve around the spindle connected with this plate. This is all the movement of which the English caster is practically capable, and it will be seen upon examination of the Mackelcan & Murdock spcification, (Record p. 85–86) that they never conceived and nowhere suggest, in any manner, that any other purpose was desirable or intended to be performed by their caster. This is admitted by the defendants' own expert, Mr. Knight.

Mr. Knight's testimony, upon cross-examination, is as follows:

Question 29. Referring to the "defendants' exhibit, Mackelcan & Murdock patent," I will ask you to state whether you find in the descriptive part of the specification of this exhibit any statement whatever of a caster so constructed that the spindle or cap-plate fixed to the furniture will oscillate in a vertical plane while the wheels and axle will revolve in a horizontal plane; if so, refer to the page and line.

Answer. I find this indirectly and inferentially stated on page 6, lines 21 to 26, where it states that "the lateral surfaces in motion do not touch each other."

Q. 30. Is that all the reference you find to it in the specifications or claims of the Mackelcan & Murdock patent?

A. I find general reference to rendering the caster more easy in movement and better adapted to ride over uneven surfaces.

Q. 31. By reason of what?

A. By reason of having two floor-wheels, and also by making the wheels of large size.

Q. 32. That is the only reason given, is it not, in that specification, why they will ride over uneven surfaces more easily?

A. That is the only one that I remember.

Q. 33. Do you find in that specification any advantage claimed for the action of the floor-wheels, or rather the housing, having a compound motion with reference to the central pivot so that when the floor-wheels meet obstructions upon the floor-surface the motion is taken up by the play of the parts, and does not travel to the leg of the furniture to which the caster is attached?

A. I do not find this language in the specification but it is a necessary result of the construction shown and described. (Record p. 64.)

This omission, on the part of Mackelcan & Murdock, to set forth in their specification, in any manner, either by direct statement, expression or inference, that any

oscillation in a vertical plane of the upper portion of the caster was desirable, or intended, is exceedingly significant. If it shows anything whatever, it is that they never conceived of a caster intended to allow any such movement; that they never invented it, and never having invented it, they were unable to describe it.

In reference to this Mackelcan & Murdock caster, the testimony on the part of the complainant is full and complete. Chester Bradford, Esq., describes it fully in his evidence in rebuttal, as follows:

Chester Bradford, recalled, testified as follows—(examined by C. P. Jacobs, Esq., attorney for complainant:)

Question 1. State whether, since you were on the stand before, you have examined the defendant's exhibit, Mackelcan & Murdock English patent, and if yea, whether you understand the same and the invention described therein?

Answer. I have examined the said exhibit, and understand the same. My examination has been chiefly directed to that portion consisting of Figures 25, 26, 27 and 28 of the drawings, and the description relating thereto, that being, as I understand it, the particular part of said patent which has been brought into this case.

Q. 2. What do you find in the specification of said English patent which indicates that anything more than the revolution of the caster-plate in a horizontal plane was intended to be provided for, in the caster therein described, and the revolution of the floor-wheels upon their axis?

A. So far as can be determined from the specification, the object of the inventor was to provide a caster which would revolve about a downwardly projecting spindle from the caster-plate, and the wheels of which would revolve upon their axle or axle-block, and the

anti-friction roller being in a horizontal plane. I can not find by the specifications that the inventor had any other purpose in view in making this invention.

Q. 3. What do you find, if anything, in said exhibit (in their patent) which indicates that the compound motion provided for in the Martin caster, and described in Martin's patent, was intended to be provided for or allowed in the English caster of Mackelcan & Murdock?

A. Nothing of the kind is mentioned in their specification, nor anything which would indicate that to be their purpose. In the drawing Fig. 25 shows a little space left between the spindle and the opening in the caster-block into which it enters, but the purpose of this, as stated by the inventors in their specifications, so far as there is any statement at all concerning it, is that there shall be "No oblique or lateral surfaces in motion that even touch each other." That this is their object, rather than any oscillating movement, is confirmed by the succeeding language of the specification, as follows: "The whole weight or force being thus directed entirely upon the horizontal axis of the wheels, confers such strength and smoothness of action that casters on this principle may be made of much less weight than others, and sustain and work under any given load." It being thus emphasized that the weight or force is entirely upon the axles of the wheels, rather than against the lateral surfaces, which would be in contact if the spindle was made to fill the orifice in the axle-block into which it enters.

Q. 4. Please examine the model marked "Defendant's exhibit, 1840, caster," and state how it compares with and conforms to the device shown in the defendant's exhibit, Mackelcan & Murdock's English patent.

A. I find it to be a substantially correct representation of the device shown in the patent, except that the caster-plate seems to be elevated very slightly more above the floor-wheels than in the drawing, and the spindle is, if anything, slightly smaller than in the drawing, while I find screws provided to hold the wheels in place, which are not in the drawing at all. The difference which I speak of in measurement are, however, very slight.

Q. 5. What do you find in the Mackelcan & Mur-

dock patent, either in the description or drawings, which would indicate that any provision was made for placing the wheel-housing between the caster plate and the floor-wheels?

A. There is nothing whatever, either in the specification or drawings, indicating any such construction; in fact, in the figures of the drawing to which I have referred, there is nothing which could be fairly called a wheel-housing, but, rather, an axle-block, which is entirely between the floor-wheels and does not enclose them at all; in fact, there is no room between the caster-plate and the floor-wheels, which would permit any wheel-housing to be used.

Q. 6. In the Martin device, against what, if anything, would the caster-plate in its oscillation in a vertical plane, strike on either side?

A. The wheel-housing.

Q. 7. What effect would that have, if any, as a friction-brake in retarding the movement of the floor-wheels upon that side?

A. It would have no effect upon the floor-wheels directly; if the rotation of the caster about the vertical spindle had not been completed, it might impede that movement some.

Q. 8. Against what would the caster-plate in the Mackelcan & Murdock patent, as shown in the defendant's exhibit, Mackelcan & Murdock patent and caster model, strike, if anything, if the caster-plate should oscillate far enough on either side?

A. The caster-plate, in that event, would come directly in contact with the floor-wheels, there being nothing at all between said caster-plate and the floor-wheels.

Q. 9. What effect would that have upon the movement of the caster-wheel, thus coming in contact with the floor-wheels?

A. Such a contact between the caster-plate and floor-wheels would operate as a brake, and impede the rotation of the wheels.

Q. 10. Examine the model marked "Defendant's exhibit, Yale caster," and state how this caster, in the

respect just asked about, compares with the Mackelcan & Murdock caster, and how with Martin's?

A. It compares in that respect with the Martin caster, and not with the Mackelcan & Murdock.

Q. 11. Please explain.

A. That is, the caster-plate comes in contact with the wheel-housing, when there is sufficient oscillation, and not with the floor-wheels; the wheel-housing being between the caster-plate and the floor-wheels.

Q. 12. In what respect is the wheel-housing in the defendant's model, Yale caster, before you, like the wheel-housing in the Martin?

A. It is substantially the same in general form; that is, it sustains the wheel-axle in the center and at both ends, and is between the wheels and the caster-plate. It has an elliptical opening in its top side, (which, however, does not extend entirely through the wheel-housing). It extends back from a vertical line, passing through the axis of the wheels, to a point considerably to the rear, and is different in having provision for a second anti-friction truck to the rear of the spindle which enters the opening.

Q. 13. What do you find in the Mackelcan & Murdock patent, or model, that is in all respects the equivalent of the wheel-housing in the Martin caster?

A. I do not find anything that can be said to be the same in all respects as the wheel-housing in the Martin patent.

The drawings and so much of the English specifications as refer to the figures are in the record, and upon a careful examination thereof, with the accompanying drawings, it will be seen that there is no reference whatever to any device or provision allowing the movements produced by the Martin caster. There is not even a hint to be found that it was the purpose of the inventors to allow any such thing. It will further be seen that the views of Mr. Bradford and his description of the

Mackelcan & Murdock caster is substantially correct. It is further shown, conclusively, by all the witnesses in the case, including those for the defense, that not a single Mackelcan & Murdock caster was ever put upon the market inthis country, or anywhere else, that they have heard of, and that it rested from 1840, the date of its invention, until it was resurrected in 1884 to create a defense in this case, deep in an unmarked grave. It is believed that this resurrection will be found altogether unavailing in this case. It required something else to be done to the Mackelcan & Murdock caster before it could be made worth anything. There is no dispute and no contention but what Martin was an independent inventor. His caster, soon after it was invented, was put into the hands of the appellants, and after many years' labor, and the expenditure of great sums of money, it has achieved a marvelous success, and is in use all over the United States and in Canada. It has come into almost universal use as a new and ingenious device, superseding others, and one of the very best evidences of his originality and ingenuity is the fact that it is followed by a host of imitators.

THE LAW OF THIS QUESTION.

The law on the question of the anticipation of the device of an American inventor by a foreign patent is found in Section 4923 of the Patent law, and is negative in its terms. It is as follows: "Whenever it appears that the patentee, at the time of making his application for a patent, believed himself to be the original and first inventor or discoverer of the thing patented, the same

shall not be held to be void on account of the invention or discovery of any part thereof having been known or used in a foreign country before his invention or discovery thereof, if it had not been patented, or described in a printed publication."

Section 4886 provides that: "Any person who has invented or discovered any new or useful art, machine, manufacture or composition of matter, or any new and useful improvement thereof, not known or used by others in this country, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, may obtain a patent," etc.

Section 4923 has been construed in a number of cases, both by the Patent Office and by the Courts. In the case of Herron, 1st O. G. 608, it was held that a foreign patent, to anticipate the novelty of an invention, must contain the device, by suitable drawing and description, *and in any case the invention must be so distinctly shown and described as to be a matter of certainty and not of inference.* This is undoubtedly a correct statement of the law, and the most that the defendant's experts have made after their critical examination of the Mackelcan & Murdock patent, is that they must infer that certain things were intended, although they can find no description and no hint thereof. Certainly if Mackelcan & Murdock meant to provide for the compound movement shown in the Martin device, they would somewhere have described it or claimed it, and yet, all the witnesses admit there is nothing of the kind to be found in the Mackelcan & Murdock specification.

Mr. Knight's evidence, heretofore quoted, is the utmost he could say, although he was employed by the Yale Caster Company for the purpose of showing that the Mackelcan & Murdock patent anticipated Martin's device.

The Courts have passed upon this same question in a large number of cases, and they have uniformly held that the description in a foreign publication or patent, in order to invalidate an American patent must contain and exhibit a substantial representation of the patented improvement, in such full, clear, and exact terms, as to enable any person skilled in the art or science to which it appertains, to make, constrnct, and successfully practice the invention.

In *Nathan* v. *The N. Y. Elevated R. R. Co.*, 2 Fed. Rep. 225, the suit was brought on American letters patent issued to one James Gresham, for an improvement in boiler injectors. The defendant set up several patents in defense, as anticipating Gresham's invention, among others some English patents of Barclay & Morton, also for injectors. In this case the Court said:

"All injectors will, in starting, draw water upwards, to some extent, but not much when they have the injector apparatus only. Whatever they do draw, they draw upon a similar principle to that upon which Gresham's lifting apparatus works. They to that extent lift water, and his lifts water; still, they can not lift to the extent his does. * * * If Barclay and Morton's patent could be said to suggest the combination of any lifting apparatus other than that mentioned in other parts of their patent, with a Gifford injector, it does not show any such, nor any mode of combining them. A patent or printed publication must, in order to defeat a patent for an invention subsequently patented, describe the invention so as to enable those skilled in the art to which it belongs, or most nearly appertains, to construct

and operate it. This patent gives no information as to how the lifting apparatus can be combined with a Gifford injector: it merely says that this may be done, and leaves others to invent the mode of doing it. Gresham invented a mode which their suggestion in no way anticipates, or defeats." (There was a decree for the complainant.)

Now, in the above cited case, it will be seen that the English patent of Barclay & Morton in fact suggested that a certain arrangement could be made, which Gifford afterwards actually made and patented, and the Court held that although the prior English patent suggested it, inasmuch as they did not describe it their patent did not anticipate Gresham's.

Now compare that case with this. There is not even a hint or a suggestion in Mackelcan's & Murdock's patent that any oscillation in a vertical plane of any of the parts of the caster was desired. In fact from the very description of the caster it is apparent that it was not intended to allow any such movement; it was not provided for, and we search the patent through in vain to discover any arrangement of the parts allowing the compound motions which have made the Martin caster famous from one end of the country to the other.

This Court has recently passed upon the same question, in the case of *Downton* v. *Yaeger Milling Company*, 108 U. S,, 466.

This was a suit brought by Downton against the Yaeger Milling Co., for the infringement of letters patent issued to him in 1875, for an improvement in processes of manufacturing middlings flour. The answer of the defendants set up, among other things, the want

of novelty, in that the invention had been described in a printed publication, before the invention of Downton. The opinion of the Court was delivered by Woods, J., and I quote a portion of it, comparing the construction of these clauses of the Patent law:

"By Sec. 24 of the Acts of 1870, it was provided that any person who had invented any new and useful art, machine, manufacture or composition of matter, not known and used by others in this country, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, might obtain a patent therefor."

In construing the words "described in any printed publication in this or any foreign country," as they were used in reference to the same subject in Section 7 of the Act of 1836, this Court, in the case of *Seymour* v. *Osborne*, 11 Wallace, 516, said:

"Patented inventions can not be superseded by the mere introduction of a foreign publication of the kind, unless the description and drawings contain and exhibit a substantial representation of the patented improvement in such full, clear and exact terms, as to enable any person skilled in the art or science to which it appertains, to make, construct and practice the invention, as they would be enabled to do if the information was derived from a foreign patent."

So in *Cohn* v. *United States Corset Company*, 93 U. S. 366, Mr. Justice Strong, speaking for the Court, said:

"It must be admitted that unless the earlier printed or published description does exhibit the later patented invention in such a full and intelligible manner as to enable persons skilled in the art to which the invention is related, to comprehend it without assistance from the patent, or to make it or repeat the process claimed, it is insufficient to invalidate the patent."

And the rule thus laid down is applied strictly by the Courts, in determining the rights of the American as against the foreign inventor; for if the foreign dis-

covery is not patented or described in any printed publication, it might be known and used in remote places for ages, and the people of this country be unable to profit by it. The means of obtaining knowledge would not be within their reach, and so far as their interest is concerned, it would be the same thing as if the improvement had never been discovered. It is the inventor that brings a device here and places it in their possession, and as he does this by the art of his own genius, the law regards him as the first and original inventor, and protects his patent, although the improvement had in fact been invented before, and used by others.

Gayler v. *Wilder*, 10 Howard, 477.
Sewell v. *Jones*, 91 U. S., 171.

What was meant by Congress undoubtedly is, in the first place, that there shall have been an invention, and in the second place, that it shall have been made patent to the world—that is, patented so that it shall become public property—and that the patent should contain a full and accurate statement of how the device was constructed so that it could be made when the monopoly had expired; and if a patent does not do this, does not disclose the invention fully, or does not describe it exactly, it is no anticipation of the work of a subsequent inventor, and he is entitled to protection.

In the *American Leather Co.* v. *The American Tool Co.*, 4 Fish., 284, the Court held that if the machine described in the foreign patent required further invention to make it a practical and operative machine, and to embody the same invention which is described in the

American patent, it would not work the forfeiture of the American patent.

In *Goff* v. *Stafford*, 3 B. & Ard, 610, in the Circuit Court of the United States for the District of Rhode Island, the opinion was delivered by Mr. Justice Clifford of this Court, who tried that case upon circuit. The case was brought for the infringement of certain American letters patent, and the defense was that the patentee had been anticipated by an English patent, and upon this subject to Court said:

"Patented inventions cannot be superseded by the mere production of a foreign publication of the kind, though of prior date, unless the description and drawings contain and exhibit a substantial representation of the patented improvement in such full, clear and exact terms as would enable any person skilled in the art or science to which it appertains, to make, construct and practice the invention, to the same practical extent as they would be enabled to do if the information was derived from a prior patent. Mere vague and general representation will not support such a defense, as the knowledge supposed to be derived from the publication must be sufficient to enable those skilled in the art or science to understand the nature and operation of the mechanism, and to carry the invention into operation."

Again, even conceding, for the sake of argument, that the several figures of the drawings of the Mackelcan & Murdock patent illustrate a caster like Martin's, which is far from being the fact, yet, inasmuch as the specification itself contains no description of any such device, it is clear, upon the authority of many well considered cases, that such drawings alone could not, unaccompanied by textual description, invalidate Martin's patent.

In re Atterbury, 9 O. G., 640.
Judson v. *Cope*, 1 Fish., 615.
Reeves v. *Keystone Co.*, 5 Fish., 456.
New Process Fermentation Co. v. *Koch*, 21 Fed. Rep., 587.

On examining the models, the distinction between the English caster and the Martin caster will fully and clearly appear; and it is safe to say that the description in the English specification does not apply to the Martin caster at all. The only thing that they have in common is a pair of floor-wheels, a friction-wheel and a furniture-plate, and the friction-wheel is not located as in the Martin caster, over the axle of the floor-wheels, but is thrown in front of such axle. The English caster has no housing at all, and, as Mr. Bradford well says, there is no room for any. The top of the furniture-plate is not a housing, either in the English caster or in the Martin caster, or in the defendant's caster; but the housing is something interposed between the furniture-plate and the peripheries of the floor-wheels. It is not found in the English caster at all, and there is no provision for any; and a housing of some sort is absolutely necessary to allow the two motions found in the Martin caster and in the defendant's caster. Neither the defendant's caster nor the Martin caster could possibly be constructed from any description or drawing found in the English specification. It requires invention to make a caster having two wheels, which would allow the motions, both in the vertical and horizontal planes, and it is clear that so far as the English patent is concerned, Martin was the first in this peculiar field, and is entitled

to all the benefits of liberal construction which the Courts universally allow to a pioneer in the art.

This English caster, then, may well be dismissed from the case, as having been an imperfect and worthless device, one which never came into use, even in the country in which it originated, and one which was never, in any manner, heard of in this country; and so far as Mackelcan & Murdock are concerned, it was not until thirty-seven years after they had failed, that the genius of an American inventor, Martin, contrived and produced the beautiful, simple and effective caster which is now used and for sale everywhere.

THE U. S. PATENTS CITED BY DEFENDANTS.

The consideration of the various Amercian patents cited by the defendant as anticipating Martin's device, need not occupy very much time, inasmuch as the mere inspection of those patents is sufficient to satisfy the Court that none of them embody Martin's invention, and that the latter, as compared with the casters that had preceded it, is a great step in advance of them all, and involves new principles of construction and operation.

The defendant's expert, Mr. Knight, described them somewhat at length in his testimony, and, on cross-examination, he is asked the following question:

Cross-Question 65. Referring now to the American patents which have been given in evidence, I ask if you find in any of them, prior to Martin's, a furniture-caster having paired floor-wheels, with an anti-friction wheel vertically in line over the axle of the floor-wheels, and so attached by suitable mechanism to a piece of furniture that the caster is permitted to accomplish the compound motion of oscillation in a vertical plane and of revolution in a horizontal plane; if so, what one?

Answer. I find all these conditions provided for in the Buckingham caster, Patent No. 150,132, inasmuch as the caster will have the same rocking motion if the lateral anti-friction wheels should be removed from their open bearings, which is certainly within the power and knowledge of an intelligent person using the caster.

Cross-Q. 66. Do you find any reference in the discription of the Buckingham patent, that any vertical oscillation of the spindle or of the furniture-plate is intended, or that it is regarded as advantageous, or any claim therefor?

A. I do not. (See Record, pages 67–68.)

Now bear in mind that this is the defendant's expert who has testified at length, and given in detail the features of the various casters described in the American patents set up in the defendant's answer; and being closely pressed to point out one of those patents which represents a caster similar in construction to the Martin, he only names one, and that is the patent of Buckingham. Of this device, Mr. Bradford, the complainant's expert, in his rebtting testimony says:

"In the defendant's exhibit, Buckingham patent, No. 150,132, I find a double-wheeled caster having two floor-wheels, a wheel-housing with a vertical spindle, and provided with three anti-friction trucks between the wheel-housing and the caster-plate. There is no provision for oscillation in this caster, the spindle and wheel-housing being shown in close contact throughout the entire length of the bearing between them and the three anti-friction trucks, effectually precluding any oscillation, even if there were looseness in this bearing, and even if there was an elliptical housing opening, as in the Martin patent; but, as I said before, nothing of the kind is indicated." (Record p. 130.)

On examination of the drawing of the Buckingham patent, it will be seen that Mr. Bradford's description is correct, and it must be clear, beyond question, that if

Buckingham intended to construct a caster on the plan of the Martin, it is remarkable that nowhere in his specification can be found a single word indicating any such intention.

In the record, page, 128, Mr. Bradford, the complainant's expert, examines and describes, at length, all these American patents cited by the defendants, and he says in answer to Question 15:

"I do not find in any of them the invention shown and described in the Martin patent, nor in any of them any device or combination of devices by which the same result will be accomplished."

MARTIN'S CLEAR DESCRIPTION.

Now while all these patents cited by the defendants, the English patent and all the American patents, are wholly silent upon the subject of the peculiar motions provided for in the Martin caster, Mr. Martin's specification is clear and definite upon this subject. He says, in describing the invention he had made:

"Common casters in swiveling pivot upon the floor, the point of pivot motion is the point of contact between the wheel and the floor. Such pucker and wear carpets, and are sluggish in their swiveling action. Two rollers side by side will, in swiveling, turn in opposite directions, and it will be found that they roll upon the floor instead of pivoting, as does the single wheel; and if the floor should be irregular, as is often the case, one wheel of the pair would not touch the floor, and the two-wheeled caster would become, practically, a one-wheeled caster. *My improvement consists in making the*

axis of the two wheels oscillatory, with reference to the article to which the furniture caster is attached; the axis of oscillation being at right angles to the floor-wheels, allows the wheels to accommodate themselves to ordinary inequalities of floor.

Now, as if this description might in any sense be found indefinite, Mr. Martin proceeds to enlarge upon the advantage of this oscillating movement, and to describe how it is accomplished by his device. I quote again from his specification:

"The housing B furnishes bearing supports for the two floor-wheels EE, and the anti-friction pivot wheel F. The latter wheel is situated centrally between and vertically above the floor-wheels. The housing swivels upon the stem in the usual manner. *Were only a swiveling motion of the housing desired it is fitted upon the central pivot very close, allowing only looseness enough for the swiveling action; but the object sought by my improvement demands that the housing should have a compound motion, with reference to the central pivot. It must revolve upon a vertical axis, and oscillate upon a horizontal axis.*"

Now, on comparing this description with the description of the Mackelcan & Murdock caster, the difference is remarkable. The English patent, in the language of Martin, only desires a swiveling motion of the wheel frame, and therefore its fit upon the central pivot is close, "allowing only looseness enough for the swiveling action," and the very construction of this caster shows that nothing more or different was ever intended; while on the contrary the object sought by Martin's patent demands that "the housing should have a compound motion, with reference to the central pivot."

"It must revolve upon a vertical axis and oscillate upon a horizontal axis."

Right here is the whole gist of this case. The trouble is that the Yale Caster Company, who is the real defendant in this suit, as the whole record discloses, and to which I shall hereafter call the fuller attention of the Court, have passed by all previous devices that furnished only looseness enough to allow swiveling action, and have taken up and copied Martin's caster, wherein the housing has a compound motion with reference to the central pivot. In short, the housing of the defendant's caster, in the language of Martin's specification, "must revolve upon a vertical axis, and oscillate upon a horizontal axis." Without these compound motions, so fully and plainly described and figured by Martin in his specification, the defendant's caster is worthless, and could not for a moment compete with Martin's caster in the market. It is onlyvaluable in so far as it appropriates and embodies Martin's invention.

In regard to all the above patents adduced against Martin's patent of 1887, the language of Mr. Justice Blatchford, in delivering the opinion of the Supreme Court of the United States in the case of *The Consolidated Safety Valve Co.* v. *The Crosby Steam Gauge and Valve Co.*, 113 U. S., 157, may appropriately be quoted. It is this:

"*In regard to the above patents cited against Richardson's patent of 1866, it may be generally said that they never were in their day, and before the date of that patent, or of Richardson's invention, known or recognized as producing any such result as his apparatus of that patent produces as*

*above defined. Likenesses in them in physical structure to the apparatus of Richardson in important particulars may be pointed out, but it is only as the anatomy of a corpse resembles that of a living being. The prior structures never effected the kind of result attained by Richardson's apparatus, because they lacked the thing which gave success. * * Taught by Richardson, and by the use of his apparatus, it is not difficult for skilled mechanics to take the prior structures and so arrange and use them as to produce more or less of the beneficial results first made known by Richardson; but prior to 1866, though these old patents and their descriptions were accessible, no valve was made producing any such results."*

Substitute "Martin" for "Richardson" and "caster" for "valve," and the foregoing quotation is exactly applicable to the case at bar.

Upon a careful consideration, then, of all the patents cited in the defendant's answer, including the English patent and the American patents, not a single invention has been shown or described which combines the features of the Martin caster, prior to the date of his application for letters patent. *Indeed, all the witnesses examined upon the subject, upon both sides, testify that Martin's caster was the first one of the kind that any of them had ever seen or heard of.* To illustrate, the defendant's expert, Mr. Knight, testified that he was not acquainted with the defendants, Spiegel & Thoms, and that he had been employed by the Yale Caster Co., of which M. B. Schenck, formerly of Fulton, N. Y., is secretary. He testifies that he was one of the firm of Knight Bros., who prosecuted the application of said

Schenck for letters patent for an improvement in furniture casters, filed October 22, 1881, for which Letters Patent No. 250,290 were issued on the 29th day of November, 1881. (See Record, p. 44, for copy of this patent). He was also present, concerned and employed as an attorney in prosecuting the application of the same M. B. Schenck for letters patent for an improvement in furniture-casters, filed September 30, 1882, and issued July 8, 1884, No. 301,835. (Record, p. 63). He testifies that he never saw a Mackelcan & Murdock caster until he saw the model which was made for his use in this case; and that the first caster like Martin's he ever saw was the Schenck caster, and that the same motions are found in both the Schenck patents, the earlier one and the later one.

He recollects that he had become advised of the existence of the Martin patent years ago, but he does not recollect whether Schenck's first claim in his first application was rejected on reference to the Martin patent or not.

So it would appear from the testimony of this witness, that the Martin caster is by far the oldest caster of the kind which he ever saw or heard of before the commencement of this suit, and that both the earlier and the later patents of Schenck, which were prosecuted by him as an attorney, combined these peculiar features and movements shown in the Martin caster. (See Knight's evidence, Record, p. 65).

The testimony of all the witnesses in the case, so far as it bears upon this subject, clearly shows that Martin's caster was the first of the kind ever manufactured

or brought into the American market, or offered to the public for sale. There is no dispute about this point whatever, and all of the witnesses further agree that in both of the casters patented by Schenck, the same motions are found as in the Martin caster. It is clear, then, that the averments of the answer in reference to the want of novelty in the Martin device have no foundation upon which to rest, and it must be held that the invention of Martin was novel, and that his patent is valid.

THE KINGMAN DECREE.

In this connection what is called the Kingman Decree, has an important bearing. The bill alleges that in 1882 Wm. H. Tucker and others, who are the incorporators of the appellant in this case, the Phœnix Caster Co., filed their bill of complaint in the court below in equity, against Nelson Kingman, defendant, charging him with infringing the Martin patent by the sale of furniture-casters known as "Schenck casters." That Kingman made no defense, and that a decree "*pro confesso*" was rendered against him. That Schenck was notified of the pendency of the suit, and invited to come and defend it, and that he failed so to do.

That in March, 1883, the case was brought on for hearing before Judge Drummond; that evidence was adduced, including Martin's patent, Schenck's patent, and full-sized specimens of the Martin and Schenck casters, and that the Court rendered a degree of perpetual injunction against Kingman in that case, holding that Martin's patent was valid, and that the Schenck caster was an infringement thereon; and a copy of this decree

was made an exhibit to the bill, and a certified copy of such decree was put in evidence in this case.

(Record p. 40-42.)

In answer, the defendants charged that this decree was procured through collusion with Kingman, and that the proceedings were not had in good faith, and that they should not be bound by it; and they charged further, that the Schenck casters mentioned in said decree were not like those that the defendants were using.

It is sufficient to say of this, that the defendants never attempted to make any proof whatever that this Kingman decree was procured through collusion with Kingman; and their answer in this case, on this subject, must be taken to be wholly false.

As to the fact that the casters used by them were not like the original Schenck casters described in his first patent, their answer is directly contradicted by their expert, Mr. Knight, who says that in regard to the principle of operation, both the Schenck casters are like Martin's. (See his evidence, record, p. 65, answers to cross-questions 40–44.)

The Yale Caster Co., who, as has been said, is the real defendant in this suit, appears in no creditable light, in regard to this matter. The letter of this company to the appellant will be found on pages 49–51 of the record. They therein charge that the Kingman suit was a straw suit, and that they would expose it; but, after having been allowed the fullest opportunity, they have found that discretion is the better part of valor, and they have wisely abstained from attacking the Kingman

decree in any respect. They charge, also, that the appellant's action prior to this case was equivalent to an attempt to blackmail, and they say—(pp. 50-51, bottom): "We have written our customers whom you have attempted to blackmail, to not pay you one cent, and we will furnish the material to defend them." This letter is signed by the Yale Caster Co. and M. B. Schenck, and the animus of it is evident. It shows, if anything, that the determination of the Yale Caster Co. to interfere with and break down the appellant's business and appropriate their invention, was malicious and with a full knowledge of all the appellant's rights.

This Kingman decree was not then taken by any collusion with Kingman; it was not a straw suit; it was a *bona fide* suit, brought against the first man the complainant could find that was selling the Yale casters; and it was kept open, in order that they might come in and defend their customers, and they were invited to do so; and, after they seemed willing to leave Mr. Kingman to his fate, the matter was brought to a full hearing before Judge Drummond, and the complainant took the trouble in that case to exhibit the patents on both sides, and models of all the casters, and make proof in the fullest and clearest manner.

In the light of the failure of the defendants to make good their threats to overthrow this Kingman decree, as a straw suit, it may clearly be considered that this part of their answer, boastful and foolish as it is, and unsupported by any evidence whatever, is on a par with all the rest of their averments; but these averments are not the language of the defendants, but of

the Yale Caster Co. and M. B. Schenck, who have undertaken and are responsible for the whole of this defense.

To show this very clearly, one of the defendants, Henry Frank, was put on the witness stand by the complainant. He testifies that he had no acquaintance with Mr. Burchenal, the defendant's counsel of record, that he was not employed by the defendants, and that the agents of the Yale Caster Company took charge of the case and were defending it. (See Record, p. 28–29.)

Again, Mr. Burchenal himself being put upon the witness stand by the complainant, testifies that he was employed by Mr. M. B. Schenck, and that Schenck has some kind of an arangement with the Yale Caster Company. This latter fact is evident from the joint letter of the Yale Caster Company and Schenck, found on page 49 of the record.

Mr. Knight, the defendant's expert, states that he is employed by the Yale Caster Company, of New Haven, Conn. (See Record, p. 62.)

The animus of this defense is, therefore, evident. It is the attempt of a rival corporation to appropriate Martin's invention; to enter upon the territory of the appellants, and compete with them in the public market, and in the manufacture and sale of furniture-casters, which, according to Mr. Knight, their own expert, involves the same principles of motion that are found in the Martin device, and which it is fully shown by the evidence never existed in any other device prior to the date of Martin's application.

III. THE CONSTRUCTION OF MARTIN'S PATENT.

I insist that Martin's patent must be so construed, in view of the state of art, as to cover all mere changes of form wherein the principle of operation embodied in his device is not departed from, and that he must be regarded, as to this peculiar sort of caster, a pioneer in the art. It is not denied that as between the two casters, Martin's and the defendant's, there are slight differences of form, but an infringer rarely duplicates patents; change of form and proportions, and substitution of mechanical equivalents, is, in cases of this kind, always to be expected.

The rule by which such cases are to be adjudicated is so well understood, and so frequently applied by the Courts, that very few citations are necessary. I take the liberty, however, of quoting somewhat at length, from the opinion of this Court in the case of *Winans* v. *Denmead*, 15 Howard 330. That was a suit brought by the appellant, Winans, against the defendant for an infringement of letters patent granted to him for an improvememt in railway cars. The Court below held that while Winans' patent was good for what was described therein, a conical body, it would not cover cars with rectilinear bodies; and the defendant's car being of this latter kind, did not infringe Winans' patent.

Winans appealed to this Court and the judgment of the Court below was reversed; and in delivering the opinion, Mr. Justice Curtis said, referring to the ruling of the District Judge below:

"The substance of this ruling was that the claim was limited to the particular geometrical form mentioned in the specification, and as the defendants had not made cars in that particular form, there could be no infringement, even if the cars made by the defendants attained the same result by employing what was in fact the same mode of operation as that described by the patentee. We think this ruling erroneous."

"Under our law a patent can not be granted merely for a change of form. The Act of February 21, 1793, Sec. 2, so declared in express terms, and though this declaratory law was not re-enacted in the Patent Act of 1836, it is a principle which necessarily makes part of every system of law granting patents for new inventions. Merely to change the form of a machine is the work of a constructor, not of an inventor. Such a change can not be deemed invention. Nor does the plaintiff's patent rest upon such a change. To change the form of an existing machine, and by means of such change to introduce and employ other mechanical principles or natural powers, or, as it is termed, a new mode of operation, and thus attain a new and useful result, is the subject of a patent. Such is the basis on which the plaintiff's patent rests.

"Its substance is a new mode of operation, by means of which a new result is obtained. It is this new mode of operation which gives it the character of an invention and entitles the inventor to a patent; and this new mode of operation is, in view of the patent law, the thing entitled to protection. The patentee may, and should, so frame his specification or claim as to cover this new mode of operation which he has invented; and the only question in this case is whether he has done so, or whether he has restricted his claim to one particular geometrical form.

"There being no evidence in the case tending to show that other forms do in fact embody the plaintiff's mode of operation, and, by means of it, produce the same new and useful result, the question is whether the patentee has limited his claim to one out of the several forms which thus embody his invention.

"Now, while it is undoubtedly true that the pat-

entee may so restrict his claim as to cover less than what he invented, or may limit it to one particular form of machine, excluding all other forms, though they also embody his invention, yet such an interpretation should not be put upon his claim if it can fairly be construed otherwise; and, this for two reasons:

"*First.* Because the reasonable presumption is, that having a just right to cover and protect his whole invention, he intended to do so. *Haworth* v. *Hardcastle*, Web. Patent Cases, 484.

"*Second.* Because specifications are to be construed liberally, in accordance with the design of the Constitution and Patent laws of the United States, to promote the progress of the useful arts, and allow inventors to retain to their own use, not anything which is matter of common right, but what they themselves have created.

Grant v. *Raymond*, 6 Peters, 218.
Ames v. *Howard*, 1 Sumner, 482, 485.
Blanchard v. *Sprague*, 3 *Id.*, 535, 539.
Devoll v. *Brown*, 1 Wood. & Min., 53, 57.
Parker v. *Haworth*, 4 McLean, 372.
LeRoy v. *Tatham*, 14 How., 181, and opinion of Baron Parke there quoted.
Nelson v. *Harford*, Web. Patent Cases, 341.
Russell v. *Cowley*, *Id.*, 470.
Burden v. *Winslow*, 15 How., 252.

"The claim of the plaintiff is in the following words:

"What I claim as my invention, and desire to secure by letters patent, is making the body of a car for the transportation of coal, etc., in the form of a frustrum of a cone, substantially as herein described, whereby the force exerted by the weight of the load presses equally in all directions, and does not tend to change the form thereof, so that every part resists its equal proportion, and by which, also, the lower part is so reduced as to pass down within the truck frame and between the axles, to lower the center of gravity of the load, without diminishing the capacity of the car, as described."

"I also claim extending the body of the car below the connecting pieces of the truck frame and line of draught, by passing the connecting bars of the truck

frame and the draught bar through the body of the car, substantially as described."

"It is generally true when a patentee describes a machine and then claims it as described, that he is understood to intend to claim, and does by law actually cover not only the precise forms which embody his invention, it being a familiar rule that to copy the principle or mode of operation described is an infringement, although such copy should be totally unlike the original in form or proportions. Why should not this rule be applied in this case?

"It is not sufficient to distinguish this case to say that here the invention consists in a change of form, and the patentee has claimed one form only.

"Patentable improvements in machinery are almost always made by changing some one or more forms of one or more parts, and thereby introducing some mechanical principle or mode of action not previously existing in the machine, and so securing a new and improved result. And the numerous cases in which it has been held that to copy the patentee's mode of operation was an infringement, the infringer had got forms and proportions not described, and not in terms claimed. If it were not so, no questions of infringement could arise. If the machine complained of were a copy, in form, of the machine described in the specification, of course it would be at once seen to be an infringement. It could be nothing else. It is only ingenious diversities of form and proportion presenting the appearance of something unlike the thing patented, which gives rise to such questions, and the property of inventors would be valueless if it were enough for the defendant to say, your improvement consisted in a change of form; you describe and claim but one form; I have not taken that and so have not infringed. The answer is, my improvement did not consist in a change of form, but in the new employment of principles or powers in a new mode of operation, embodied in a form by which a new or better result is produced. It was this which constituted my invention; this you have copied, changing only the form. And that answer is justly applicable to this patent.

"Undoubtedly there may be cases in which the let-

ters patent do include only the particular form described and claimed. *Davis* v. *Palmer*, 2 Brock. 309, seems to have been one of those cases, but they are in entire accordance with what is above stated.

"The reason why such a patent covers only one geometrical form is not that the patentee has described and claimed that form only, it is because that form only is capable of embodying his invention, and, consequently, if the form is not copied, the invention is not used.

"Where form and substance are inseparable, it is enough to look at the form only. Where they are separable, where the whole substance of the invention may be copied in a different form, it is the duty of the Courts and juries to look through the form for the substance of the invention for that which entitled the inventor to his patent, and which the patent was designed to secure. Where that is found there is an infringement; and it is not a defense that it is embodied in a form not prescribed and in terms claimed by the patentee.

"Patentees sometimes add to their claims an express declaration, to the effect that the claim extends to the thing patented, however its form or proportions may be varied; but this is unnecessary. The law so interprets the claim without the addition of these words. The exclusive right to the thing patented is not secured, if the public are at liberty to make substantial copies of it, varying its form or proportions. And, therefore, the patentee, having described his invention and shown its principles, and claimed it in that form which most perfectly embodies it, is, in contemplation of the law, deemed to claim every form in which invention may be copied, unless he manifests an intention to disclaim some of those forms."

The doctrine thus laid down in the case of *Winans* v. *Denmead*, has never been departed from, and this case has been subsequently cited and approved in repeated decisions of the United States Circuit and Supreme Courts.

Sewell v. *Jones*, 91 U. S. 171.

IV. THE QUESTION OF INFRINGEMENT.

The discussion of the construction of Martin's patent leads directly to the consideration of the next question, that of infringement; and to determine this question it will be proper to set forth in the beginning the terms of Martin's claim. They are as follows:

"I claim as my invention a furniture-caster composed of the following elements: The floor-wheels, EE, the anti-friction pivot-wheel, F, the housing, B, the elliptical housing opening, or its mechanical equivalent, and the rocker-formed collar-bearing or its mechanical equivalent; all combined so as to allow the floor-wheel axis to oscillate horizontally, substantially as and for the purpose specified."

It will be remembered that Martin in his specification states: "But the object sought by my improvement demands that the housing should have a compound motion with reference to the central pivot; it must revolve upon a vertical axis and oscillate upon a horizontal axis. This compound bearing is formed by making the housing-bearing slightly elliptical, and the housing collar-bearing in rocker form, as shown in Fig. 3."

Mr. Bradford, the complainant's expert, on being asked to describe the invention of Martin, does so in the following terms, in answer to Question 6:

The invention shown and described in the letters patent referred to, consists of a furniture-caster having two floor-wheels mounted on an axle supported by a wheel-housing, said wheel-housing being secured to a plate, adapted to be attached to the bottom of the legs upon an article of furniture by means of a spindle, and having an anti-friction truck mounted on an axle in the

wheel-housing interposed between said wheel-housing and the plate on the bottom of the furniture. It has some peculiarities of construction whereby the caster is permitted to oscillate on the spindle by which it is connected to the furniture, and it is adapted to revolve around said spindle, the anti-friction truck coming in contact with the bottom of the furniture, or the plate attached thereto, usually the latter.

Q. 8. How is the oscillating motion provided for in the Martin device?

A. The housing has what is termed an elliptical housing opening, through which the spindle passes, said spindle having a head upon its lower end which prevents the housing from dropping off; and also what is termed a rocker-formed collar-bearing, which rests upon this head.

Q. 9. What is the object of this oscillating movement?

A. To permit the wheels to pass over irregularities while both remain in contact with the surface over which they pass, thus preventing any binding upon the spindle or any other parts, which would take place if this peculiarity of construction was not present.

Upon examination of complainant's model caster, the Court will have no difficulty in understanding precisely the movements of the several parts, and the combination described in the claim will be found to be present, all parts co-operating together, and co-acting one upon another, to produce the desired result.

MARTIN'S CLAIM NOT NARROWED IN THE PATENT OFFICE.

It is insisted by the defendants that Martin is confined to the particular form which he has named; and they have set forth a certified copy of the record of his application in the Patent Office.

The claims of Martin, as originally presented, were

all of them defective, not setting forth the peculiar discovery he had made, which is well presented in the claim as finally allowed. There is nothing in this record to indicate that the real invention of Martin had ever been anticipated by any previous caster, or that his real invention was abandoned or modified in the Patent Office; on the contrary, the claim as finally allowed is much stronger than any claim which he had previously filed. In fact, his attorney says, under the date of October 23, 1876, that he had failed theretofore in his specification in properly exhibiting the functions "of applicant's novel combination." He declines to avoid effort by accepting for his client a meretricious claim. He withdraws all claims as presented, and substitutes the amended specification and claim. He requests that no reference be disregarded in its possible bearing, and the novelty in applicant's combination be given due consideration. (Record p. 79.) In fact, the examiner himself admits that the claims, as they had been presented, were so worded that a dozen inventions might fulfil the claims, and yet not be the equivalents of applicant's arrangement of devices, to which alone he was entitled. (See examiner's letter of October 26, 1879, Record, p. 81,) and the case was finally passed for issue the claim as now presented, which *is broader, in fact, than any claim that had theretofore been presented, and its peculiar and novel combination, which expresses Martin's invention, is not found in any preceding device or letters patent.*

Now, if we examine the defendant's caster in the light of this claim we shall find that the combination therein set forth is exactly found.

Mr. Bradford, the complainant's expert, testifies on this subject as follows. (Record, p. 19):

Q. 18. I now exhibit to you a caster marked "Complainant's exhibit, Yale Caster," will you please describe what you find in that device?

A. I find floor-wheels like those in the Martin caster, a wheel-housing similar to that in the Martin caster, a plate adapted to be attached to the bottom of the furniture leg, similar to that in the Martin caster, a spindle depending therefrom, to which the wheel-housing is attached, and an anti-friction truck interposed between the wheel-housing and said plate, located between the floor-wheels, although not precisely vertically above the floor-wheel axle. I further find a second anti-friction truck on the opposite side of the spindle from the first, which serves to receive such a portion of the weight as would be thrown thereon by reason of the location of the first anti-friction truck, slighty in advance of the floor-wheel axle. I find in the wheel housing an elliptical housing opening, into which the spindle extends; and instead of extending down through the housing and having a head upon the lower end, I find the axle of the anti-friction trucks extended through this spindle, thus securing it to the housing. It however oscillates upon this continued axle of the anti-friction truck, in substantially the same manner that the wheel-housing in the Martin patent oscillates, upon the head upon the lower end of the spindle and upon his anti-friction truck. The two casters operate in substantially the same way, and accomplish the same result.

Q. 19. Wherein does that Yale caster model differ, in principle of operation, from the device used in the Martin patent, if at all?

A. I think it differs only in construction: I do not see that it differs in the principle of operation at all. The rear anti-friction truck receives but a very small portion of the weight, and by moving the forward anti-friction truck very slighty to the rear it would not receive any of it, and it would then only serve the purpose that the point does in the Martin construction—that of preventing the caster from dropping down out of position when the article of furniture was lifted from the floor.

In reference to this rear friction-wheel found in the Yale caster, which is a mere duplicate of the front one, it appears that the examiner in the Patent Office, when Schenck applied for his patent, embodying two friction-wheels, stated that the use of one or more anti-friction wheels did not constitute invention: and Mr. Knight states that he submitted an argument to the examiner in that case, in which he insisted that the second friction-wheel was a bearing for oscillation, and not merely an anti-friction wheel. (See his evidence, p. 63 and 64, of the record.) This reduces the rear friction-wheel in the Yale caster to the precise equivalent of the rear bearing point in the Martin caster.

As bearing upon this question, the circular issued by the Yale Caster Company, in reference to the caster made by them, and which is the one that the defendants use, is important. It is found on page 45 of the record. They say:

"A two-wheeled caster has important advantages over a common one-wheeled caster. The load is carried by a large number of wheels, and the pivotal action of the single-wheeled caster whereby carpets are destroyed, is entirely overcome. In turning, both wheels will roll ahead, or one wheel roll backward and the other foward. One of our improvements consists in the use of two friction-wheels, placed on opposite sides, instead of one as heretofore used."

It will be seen that the Yale Caster Company, in this circular here, flatly repudiate the decision of the examiner in the Patent Office, who decided that there was no invention in the use of two friction-wheels, and

disavow the argument and admission of their attorney of record, when he said that the rear friction-wheel was not a friction-wheel, but a simple bearing for oscillation. The only difference is, that such a disavowal had to be made in order to get the patent issued; but after it was issued, when they push their circulars out to the trade, they think it fair and honorable to conceal the real state of facts as they transpired in the Patent Office, and puff their wares in any manner they see fit, without regard to the truth.

But I quote again from this interesting circular:

"Our device for the adjustment of the wheels to uneven floors, and for turning on the center, are entirely new. They are the simplest form of a universal joint, and add greatly to the strength of the caster."

Now this is practically an admission of complainant's case. They here put themselves upon record as saying, practically, that a universal joint in a caster, permitting these compound motions, was new; that it never had existed before, while they now pretend that their caster is only a copy, a substantial copy, of the old Mackelcan & Murdock English caster. Try this question by a comparison of the two casters. No universal joint whatever, is found in the English caster, and the only thing which the Yale caster has which approximates to a universal joint is found in the slight modification they have made of Martin's invention. They have slighty changed the form, and what have they done? Let us compare their caster with Martin's claim. They have the floor-wheels EE; they have the anti-friction pivot-wheel F; they have the housing B; they

have the elliptical housing opening; and they have the rocker-formed collar-bearing, or its mechanical equivalent, and these are all combined so as to allow the floor-wheels to oscillate vertically and revolve horizontally. It seems plain and clear, upon an inspection of the two casters, that the one is almost a reproduction of the other. The only difference is that instead of extending the spindle through the housing opening, it enters it a short distance, and has a bearing upon the journal of the friction-wheels. But this does not constitute invention.

In the language ot the Court in the case of *Winans* v. *Demead*, already quoted;

"Merely to change the form of a machine in the work of a constructor, not of an inventor. Such a change can not be deemed an invention, and in the numerous cases in which it has been held that to copy the patentee's mode of operation was an infringement, the infringer had gotten forms and proportions not described, and not in terms clained. It is only ingenious diversities of form and proportion, presenting the appearance of something unlike the thing patented, which gives rise to these questions, and the property of inventors would be valueless if it were enough for the defendant to say, 'Your improvement consists in a change of form; you describe and claim but one form. I have not taken that and so have not infringed.'"

Indeed, Mr. Martin seems to have understood that it would be comparatively easy to change the forms of some parts of his caster without departing from the principle of his invention, which was to so combine the several parts as to allow the floor-wheel axis an oscillating movement. And so it will be noticed that he claims in his combination:

"The elliptical housing opening, or *its mechanical equivalent*, and the rocker-formed collar-bearing, or *its mechanical equivalent.*"

And the only change made by the defendants is to substitute for this rocker-formed collar-bearing the mounting of the spindle upon the axle of the friction-wheels. No new principle, whatever, is introduced into the caster. The same result is sought as in the Martin caster, all the parts are combined with a view to that sole result, and the same result is obtained. That the one is the mechanical equivalent of the other in the fullest respect, it seems to me can not be doubted. The infringement is plain and palpable; it is so bold as to hardly need argument. And it is not a little singular that in the first part of the circular issued by the Yale Caster Company, in which it sets forth the advantages of two-wheeled casters, when properly constructed, the words of Martin, in his specification, are almost reproduced. No such words could have been found in the specification of the English patent, nor in any of the American patents cited in defendant's answer, and the Yale Caster Company, and Schenck, their pretended inventor, had to learn from Martin's specification what the difficulties attending the use of old two-wheeled casters were, and how they might be overcome, so as to keep both wheels upon the floor, however uneven its surface.

UNIVERSAL ACCEPTANCE OF MARTIN'S CASTER.

Again, the novelty and utility of Martin's caster is shown by its ready and almost universal acceptance by the public. As his honor Judge Drummond said, in

deciding the Barb Wire Fence cases, so it may be said of this invention of Martin's. I quote;

"Utility is not an infallible test of originality. The Patent law requires a thing to be new, as well as useful, in order to entitle it to the protection of the statute. To be new in the sense of the Act, it must be the product of original thought, or inventive skill, and not a mere formal and mechanical change of what was old and well-known; but the effect produced by the change is often an appropriate, though not a controlling consideration in determining the character of the change itself. Tested by the rule of utility here suggested, this record of the patentee shows that the device in question has been accepted by the public to an extent that has hardly heretofore followed the most successful inventions. Its utility must be cosidered as a conceded fact. From what has already been developed it is clear that it has made possible the cultivation of the extensive prairies of the West, the pampas of Brazil, and the steppes of Russia, where, before the introduction of this cheap mode of fencing, it was impossible; and it has even to a great extent already superseded the use of wooden fences in the timbered portion of the country; and the question is, to whom of these inventors is the public indebted for this widely-diffused device." *Washburn* v. *Haish* 4 Fed. Rep. 900.

The Yale Caster Company (the real party in interest in the defense) by their letter and circular, say that the trade in these casters is an immense and growing one; that they cannot afford to "trifle in this matter, for they have too much at stake." (Record p. 51.)

They are in use all over the United States and in Canada, and are to be found upon the furniture in the offices of the Judges of nearly all the Courts; and their utility and value for the purpose for which they were designed is conceded by everybody.

Of course such an invention as this has raised up a

host of imitators, among whom are the defendants in this suit; and it is sufficient to say that the caster made by the Yale Caster Company is such in form and appearance as to be readily mistaken for and to be sold in the place of the caster made by the complainants anywhere and everywhere.

MODELS AND SPECIMENS.

There are three of these, a full sized specimen Martin caster, and a full sized Yale (or Schenck) caster. As none of the English, (Mackelcan & Murdock) casters have ever been made or sold, at least in the United States, and none elsewhere that we have been able to discover, no specimen could be procured, and a model thereof has been made by a disinterested model maker, from the drawings and specifications of the English patent. All these are here with the case for inspection and examination and will, I believe, of themselves, satisfy the mind of the Court of two things. First, that the English caster was in no sense the equivalent of Martin's caster, and second, that the Yale, (defendant's) caster is the fair equivalent of Martin's and an infringement of his claim.

Respectfully Submitted,

C. P. JACOBS,

Solicitor for Appellant.

November 7th, 1889.